THE MALLOPHAGA OF NEW ENGLAND BIRDS

JAMES EDWARD KEIRANS JR.
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THE MALLOPHAGA OF NEW ENGLAND BIRDS

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INTRODUCTION

The first mention of Mallophaga in the United States seems to have been by Dr. W. I. Burnett (1852) in an abstract of a paper, on the external parasites of warm-blooded animals, presented before the Boston Society of Natural History. He stated:

.....that although there are single species peculiar to particular animals, there are others which are found in different species of the same genus, as is the case in the parasites living on birds of the genus Larus (Gulls) and the diurnal birds of prey.

The first species of Mallophaga determined in the United States from a North American bird was Docophorus buteonis, (now Craspedorrhynchus), by A. S. Packard, Jr. from Buteo lineatus (Gmelin) in the year 1870. In the same paper he described Philopterus hamatus (Packard) and Ricinus thoracicus (Packard) both from Plectophenax nivalis (Linn.) and Actornithophilus lari (Packard) from Larus marinus Linn.

In 1878 Joseph Leidy, the famed parasitologist who identified Trichinella spiralis in hog muscle, described Piagetiella perale (Leidy) from Pelecanus erythrorhynchos Gmelin. It is interesting to note that this mallophagan is not one of the commonly found types of lice which feed on the feathers of its host, but one which lives inside the pouch of the pelican feeding on salivary secretions and blood.

Osborn in 1890 described Saemundssonia phaetona from Phaetona aethereus Linn. and in 1891 he described Geomydoecus geomydis from the Plains Pocket Gopher, Geomys bursarius (Shaw).

However, the real beginnings of Mallophaga taxonomy in the United States began in 1896. In that year three indispensable publications
appeared; New Mallophaga I and II, by Vernon L. Kellogg, and Insects Affecting Domestic Animals, by Herbert Osborn. Kellogg's work is the first large systematic treatment of the Mallophaga to appear in America. Part III of New Mallophaga appeared in 1899, along with the first extensive treatment of the anatomy of the Mallophaga by R. E. Snodgrass.

In the twentieth century, M. A. Carriker, Jr. (1902) published his first paper on Mallophaga and continued working, mainly on Neotropical species until his death in 1965. At the present time, the most active workers in this country are Edwards, Emerson, Price, Tuff, and Ward.

In an early publication, Peters (1928) listed 94 species of Mallophaga from 114 species of birds in Ohio. Three years later Geist (1931) added 21 additional species of Mallophaga. Peters (1936) published a list of bird ectoparasites from the states east of the Mississippi. The only acceptable state list of Mallophaga is from North Carolina (Brimley, 1938, Supplements, 1942, 1950).

Since the earlier works are no longer readily available, and since others tend to be a list of birds rather than a list of Mallophaga (Johnson, 1931), the present work is intended to bring together the Mallophaga of a relatively small area into a readily usable form and to provide keys to the 64 genera represented and descriptions, where available, of the species.
Linnaeus in his Systema Naturae, X Editio, 1758, placed the Mallophaga in the order Aptera which also contained the classes Crustacea, Chilopoda and Diplopoda. In 1802 Latreille created the order Parasita in which he placed both the biting and sucking lice. Leach (1815) erected the order Anoplura and included in it two families, Pediculides and Nirmides. With the publication of Die Familien und Gattungen der Theirinsekten (Insecta epizoa); als ein Prodromus einer Naturgeschicht derselben by Nitzsch (1818), began the first systematic study of the Mallophaga. He described the new order Mallophaga to include those lice with mandibulate mouth parts. Latreille (1825), redefined the Parasita and divided it into two groups, the Mandibulata (chewing lice) and Siphunculata (sucking lice). Shipley (1904), gave the name Lipoptera to the Mallophaga but this name has not been accepted by modern workers. The rules of zoological nomenclature do not apply above the family level but the ordinal name Mallophaga Nitzsch has priority over all others used for this group and is now accepted by most American workers. Some entomologists, mostly European, combine the Mallophaga and Anoplura into the order Phthiraptera. Weber (1939) includes all lice in the order Phthiraptera and Clay (1957) considers the Mallophaga to be a suborder of the order Phthiraptera with the Amblycera and the Ischnocera considered as superfamilies.

It would seem that from a taxonomic and phylogenetic point of view, Weber's and Clay's opinions may be correct and that the order Phthiraptera may soon be accepted by all workers. However, I have not used their classification. I have held to the view of the majority of North American workers, since this paper has the purpose of serving as
a guide to the New England Mallophaga. Almost the entire literature in this field is classified with Nitzsch's ordinal name and as a practical workable classification serves its purpose quite well. The Amblycera and Ischnocera are regarded as suborders with three families found on New England birds; Laemobothriidae, Menoponidae, and Ricinidae in the Amblycera and one, Philopteridae, in the Ischnocera.
METHODS AND MATERIAL

All birds were collected under permits granted by the Federal Government and the State of New Hampshire. Most of the larger birds were shot with a 20 gauge shotgun equipped with a poly-choke and equipped with a .410 adapter for some of the smaller birds. Sets of fine mist nets, (type A)\textsuperscript{1}, were used for collecting a great many of the passerine birds.

Birds were placed in a closed container, usually a pint or quart ice cream carton, containing a wad of chloroformed cotton and left for several minutes. The bird is then removed and shaken over a large sheet of white paper. Ruffling the feathers and running a blunt dissecting needle under the feathers and then out at right angles aids in dislodging the lice.

Another method for removing Mallophaga from their hosts is dusting with the silica aerogel, Dri-Die 67\textsuperscript{2}. After mist-netting, the birds are placed in a plastic bag and dusted with a hand bulb duster. The bird and the plastic bag are put into a brown paper sack. The bird becomes quiet in the darkness. The bird is removed after 15 minutes and its feathers ruffled while it is still inside the plastic bag. The bird is released and the Mallophaga recovered from the plastic bag.

1. Northeastern Bird Banding Association
   360 Brook Road
   West Hartford, Connecticut

2. W. R. Grace & Company —
   Davison Chemical Division
   Baltimore, Maryland
Dri-Die is an amorphous white powder which, when applied, absorbs the waxy layer of the cuticle and the resulting dehydration kills the Mallophaga. It has the added advantage of irritating the Mallophaga causing them to release their mandibles thus allowing them to drop off the bird.

Mallophaga, to be properly studied, must be cleared and mounted on microscope slides. The technique most commonly used is to clear in potassium hydroxide and mount in Canada Balsam. They are prepared according to the following method:

1. 10% KOH, cold - 24 hours.
2. Transfer to distilled water and remove body contents.
3. Transfer to 10% acetic acid - leave for at least ½ hour, but up to 24 hours, if required.
4. Transfer to acid fuchsin - ½ hour. (2 drops in a cavity block with distilled water).
5. Transfer to 40% alcohol - 5 minutes. (for unstained specimens go from step 3 to step 5).
6. Transfer to 80% alcohol - 5 minutes.
7. Transfer to 95% alcohol - 15 minutes.
8. Transfer to clove oil - 20 minutes.
9. Mount in Canada Balsam.

5-8. Double these times if specimens are large. In fact, the majority of specimens can be left longer in the alcohols without losing too much stain. The genitalia can be dissected out in clove oil. If sufficient specimens are available, leave some unstained; heavily sclerotized forms need not be stained.

The above procedure is satisfactory but time consuming.

The following procedure was used in making permanent slide mounts of the Mallophaga collected during the course of this study. A small incision was made along an intersegmental membrane as far forward on the abdomen as possible. This allowed rapid penetration of the KOH and easy removal of the crop and other body contents. Specimens were cleared in cold 10% KOH for several hours depending on the size of the louse and the amount of sclerotization. They were then transferred to
two changes of distilled water where the internal organs were removed. They remained in distilled water for at least two hours. They were then placed directly into Hoyer's Mounting Medium according to the following formula:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Distilled Water</td>
<td>50 ml.</td>
</tr>
<tr>
<td>Gum Arabic (clear crystals)</td>
<td>30 gm.</td>
</tr>
<tr>
<td>Chloral Hydrate</td>
<td>200 gm.</td>
</tr>
<tr>
<td>Glycerine</td>
<td>20 ml.</td>
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The specimens were mounted on 75 x 25 mm. slides and covered with round, 12 mm. cover slips. After drying for several days on a 40°C slide warmer they were ringed with asphaltum. Specimens were mounted separately or, when possible, a ♂ and ♀ of the same species were mounted on the same slide.

Turtox CMC - 10 mounting medium was also tried but, due to the formation of excessive air bubbles was discontinued.

Measurements used in this paper were determined from mounted specimens. All measurements are in millimeters. The length of each structure was measured along the midline; the width, at the widest point of the structure under consideration.

Measurements of total length and width and length of the abdomen are unreliable in many of the Menoponidae as they are dependent on the amount of pressure exerted by the cover slip in mounting which often causes "telescoping" of the abdomen. The length of the head is again an unreliable measurement owing to the fact that the head often does not lie flat under the cover slip and the occipital margin may be distorted. The measurements least affected by distortion seem to be those of the width of the head at the temples and at the preocular enlargement and probably also the width of the prothorax. Nevertheless, I believe that measurements are still an important character in that they
give an indication of genera, which are needed for purposes.

In New England, there are several dozen species of

order Procellariiformes, including the auklets, or

petrels, can be found in the water off the New England
to a paucity of both collections of these forms and if

a study of this order was impossible.

The New Hampshire Fish and Game Department lists

species of birds occurring in the state of New Hampshire
are considered rare or very unusual, being the rare

species. The Checklist of Birds of New Hampshire
uted by The University of New Hampshire, 1944, lists
(215 including the Starling which was introduced by
Dearborn (1903), in his Birds of New Hampshire
and the Audubon Daily Field Card - 1961 - A
Massachusetts, lists 32 species of birds which occur in
New England area.

The host classification followed is that of the

of North American Birds. Fifth edition, 1949, and accidental species are omitted as they were note

successfully introduced are included.

During the course of this study I was the oppor

the Mallophaga collections of the United States National
University of Rhode Island, University of Massachusetts
University and the Connecticut Agricultural Experimen
give an indication of general size which can be used for comparative purposes.

In New England, there are commonly found seventeen of the nineteen orders of birds found in North America north of Mexico. The orders not found here are the Psittaciformes and the Trogoniformes. The order Procellariiformes, including the albatrosses, shearwaters, and petrels, can be found in the waters off the New England shores but due to a paucity of both collections of these birds and their Mallophaga, a study of this order was impossible.

The New Hampshire Fish and Game Department (1964) lists 296 species of birds occurring in the State of New Hampshire, 74 of which are considered rare or very irregular, leaving 222 more or less common species. The Checklist of Birds of Southern New Hampshire (distributed by The University of New Hampshire Bookstore) lists 214 species (215 including the Starling which was inadvertently omitted). Dearborn (1903), in his Birds of Durham and Vicinity lists 252 species, and the Audubon Daily Field Card published by A. W. Argue, Boston, Massachusetts, lists 262 species of birds which may be found in the New England area.

The host classification followed is that of the A. O. U. Checklist of North American Birds, fifth edition. Sub-species are omitted. Rare and accidental species are omitted except where noted. Exotic species successfully introduced are included.

During the course of this study, I had the opportunity to examine the Mallophaga collections of the United States National Museum, University of Rhode Island, University of Massachusetts, Harvard University and the Connecticut Agricultural Experiment Station. I was
also given the data of New England collections of Mallophaga from the Cornell University collection.

The initials used in this paper under the heading "Material Examined" are as follows:

J. E. K. - the author's collection.
A. E. B. - the A. Edmund Brower collection.
USNM - the United States National Museum collection.
U. N. H. - the University of New Hampshire bird skin collection.
M. C. Z. - the Museum of Comparative Zoology, Harvard University collection.
B. M. S. - Boston Museum of Science collection.
KEY TO THE SUBORDERS AND FAMILIES OF MALLOPHAGA
OF NEW ENGLAND BIRDS

1. Maxillary palpi four segmented; antennae four segmented, distinctly clubbed or capitate and concealed in grooves on the underside of the head; mandibles horizontal; meso- and metathorax usually separated by a suture------
-------------------------------------------------------------Suborder AMELYCERA 2.

Maxillary palpi absent; antennae five segmented filiform, not concealed in grooves; mandibles vertical; meso- and metathorax fused without a dividing suture-----------------------Suborder ISCHNOCERA 4.

2. Head evenly expanded behind, broadly triangular-----
-------------------------------------------------------------Family MENOPONIDAE

Head not evenly expanded and broadly triangular--------3.

3. Sides of head with strong bulbous swelling in front of eyes (infesting birds of prey and grebes)--------
-------------------------------------------------------------Family LAEMOBOTHRIIDAE

Side of head straight (infesting passerines and hummingbirds)-----------------------Family RICINIDAE

4. Tarsi with two claws; antennae five segmented-------
-------------------------------------------------------------Family PHILOPTERIDAE
LAEMOBOTHRIIDAE

This family is closely allied to the family Ricinidae. Members of the Laemobothriidae resemble the Ricinidae in having all legs two-clawed and the antennae enclosed in capsules which open ventrally. In the Laemobothriidae the antennal capsules are bulbous and form conspicuous lateral swellings on the head. The lateral contours of the abdomen are unbroken by any notching at the junctions of the segments.

The family Laemobothriidae contains a single genus of about 26 species. Clay and Hopkins (1952) recognized the subgenus *Laemobothrion* which includes the species of *Laemobothrion* parasitic upon the Falconiformes and the subgenus *Eulaemobothrion* Ewing, 1929, as including the *Laemobothrion* infesting the order Gruiformes and the family Paticipitidae. The largest known species of Mallophaga belong to this family; some hawk infesting species are 10 mm. in length.
LAEMOBOTHRION

Type species: Laemobothrion maximum (Scopoli, 1763)
(By subsequent designation, Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 327).

Laemobothrium Burmeister, 1838. Handb. Ent., 2: 441
(Emendation).

Type species: Laemobothrion nigrum Burmeister, 1838
(A synonym of Laemobothrion atrum (Nitzsch, 1818).

Type species: Laemobothrion opisthocoma Cummings, 1913.

Type species: Laemobothrion gracilentum Harrison, 1915
(A synonym of Laemobothrion gracile Giebel, 1874).

Type species: Laemobothrion pallescens Kellogg, 1908.

This genus is recognized by the two-clawed tarsi, bulbous antennal capsules and conspicuously large size. In Laemobothrion Nitzsch, 1818, sens. str. the clypeus is not emarginate in front and is without peg-like spines. Species of the subgenus Eulaemobothrion have the clypeus incurved and bearing several erect, peg-like spines on or near the front margin.
Laemobothrion atrum (Nitzsch, 1818)

Laemobothrion lathrobium Kolenati, 1846. Melet. Ent., 5: 139, pl. 19, fig. 6.

Type host: Fulica atra Linnaeus—European Coot.

Laemobothrion atrum (Nitzsch) has been reported from California (Kellogg, 1896), Ohio (Peters, 1928), Utah (Stanford, 1932), and North Carolina (Brimley, 1938). Procter (1938) says L. atrum "occurs on coots" in the Mt. Desert region of Maine.

I have examined one specimen of Fulica americana Gmelin, the North American host for this species of Mallophaga. It was free of all ectoparasites. There are no specimens of L. atrum collected in the New England area in the National Museum or in any of the University collections examined.

Male: Head usually with 6 stout spines at the anterior margin, occasionally two or four; one seta on each side of the gular plate. Thorax with the number of setae on the lateral projection varying from three to four; sternal plate present, indented anteriorly, sides slightly concave; meso-metathoracic plate with 2 or 3 long setae on each side; abdomen with tergal plates I-VIII undivided; tergal plate IX may be continuous across the segment or divided medially. Sternal plates III-VI rectangular and separated from the pleurites; sternite V with comb-like structures on each side, a smaller area also present on sternite VI and on the venter of the third femora.

Female: Chaetotaxy of the head as in the male. Thorax as in male. Abdomen with tergal plates I-VIII undivided; sternites I-VI as in the male, minute comb-like structures on sternum VI lacking (fig. 2).
Laemobothrion maximum (Scopoli, 1763)

Pediculus maximus Scopoli, 1763. Ent. Carniolica: 382.


Pediculus circi Fourcroy, 1785. Entomol. Paris.: 518 (nn for Geoffroy's Pediculus circi, fuscus, oblongus...).

Pediculus milvi Schrank, 1803. Fauna Boica: 193. (nn for Frisch's "Huhnergeyerlaus".


Laemobothrium nigrolimbatum Giebel, 1874. Insecta Epizoa: 252.

Laemobothrum titan Piaget, 1880. Les Pediculines: 578, pl. 49, fig. 1.


Laemobothrium oligothrix Carriker, 1903, Univ. Stud. Nebraska 3: 161, pl. 4, fig. 7.


Laemobothrion mjöbergi Eichler, 1944b. Dtsch. Ent. Z. 1943: 54, figs. 11 and 12.


Laemobothrion siddiqii Ansari ?1955. Proc. 7th Pak. Sci. conf. (Sect. Biol.): 57. (Also described as n. sp. in Ind. J. Ent. 17: 400).


Type host: Buteo buteo (Linnaeus)
New England hosts:

- *Pandion haliaetus* (Linnaeus)—Osprey.
- *Aquila chrysaetos* (Linnaeus)—Golden Eagle.

This species differs from *L. tinnunculi* (Linnaeus) as follows:

Head with flatter anterior margin; prominent lateral preocular swellings; fine short seta adjacent to very long seta on latero-dorsal temple region. Gular plate anteriorly with 2-6 short to medium setae on each side. Sitophore sclerite of hypopharynx with 2 large holes. Prothorax with patch of short setae along anterior ventral margin. Prosternal plate with 1-6 short setae on each lateroanterior portion, in addition to a minute anterior seta.

I have been unable to collect this species in New England and have no records of its every having been collected here.
Laemobothrion tinnunculi (Linnaeus, 1758)


(nn for P. Tinnunculi Linnaeus, 1758).
Laemobothrium intermedium McGregor, 1917. Ent. News, 28: 434,
pl. 28, figs. 2 and 5.
(Sect. Biol.): 57. (Also described as n. sp. in Ind. J.
Ent. 17: 400 and 18: 437).
Hist. Nat. LaSalle 28: 35, fig. 41.
Type host: Falco tinnunculus Linnaeus--Kestrel
New England hosts:
Falco columbarius Linnaeus--Pigeon Hawk.
Falco sparverius Linnaeus--Sparrow Hawk.

Head with somewhat rounded anterior margin; reduced lateral pre-ocular swellings. A pair of adjacent long setae on laterodorsal temple region. No setae on the gular plate. Sitophore sclerite of hypopharynx with 2 small holes. Prothorax with only a few short setae along the anterior margin; prosternal plate somewhat flattened anteriorly, with only one short seta on each side.

I have been unable to recover this species of Mallophaga and there are no published records of its collection in New England.
KEY TO THE NEW ENGLAND MENOPONIDAE

1. Gular plate trilobed, head crescent shaped with narrow preocular slit on dorso-lateral margin. Abdominal pleurite with postero-ventral angles prolonged posteriorly--------------------------------------------------- PSEUDOMENOPON 
   Not as above-----------------------------------------------------------------------------------------------2

2. Head with a pair of ventral sclerotized processes arising near base of palpi------------------------------------------3
   Head without such processes------------------------------------------------------------------------4

3. Distal anterior angle of second antennal segment prolonged and rounded. Abdominal pleurites with postero-ventral angles prolonged posteriorly-------------------HOHORSTIELLA 
   Distal anterior angle of second antennal segment not prolonged-------------------------------------MENACANTHUS 

4. Combs of short spines on third femora---------------------------------------------------------------5
   Combs of short spines on third femora absent; patches may be present----------------------------9

5. Last segment of antenna with an indication of division into two. Abdominal sternites III-IV in ♀, and III-V in ♂ two or more combs of short setae on each side----------CUCULIPHILUS 
   Last segment of antenna without indications of division into two--------------------------------------6

6. Relatively large species (4-8 mm.). Narrow preocular slits; antennal cavity deep and partially covered from below. Gular and prosternal plates well developed. Prosternal plate with more than two median setae----------------------------------------PIAGETIELLA 
   Not as above---------------------------------------------------------------------------------------------7

7. Segments of antennae short, second segment produced and pointed, last segment globate---------------CICONIPHILUS 
   Not as above---------------------------------------------------------------------------------------------8

8. Abdomen ovoid with greatest width at segment IV. Dorsal bands joining occipital and preocular sclerotized areas absent. Deep broad or narrow preocular slit. Sternite III with two or more combs of spines------------------------------------------KURODAIA 
   Temples square or flatly rounded, never tapering; head with conspicuous dark brown or black sclerotized areas; one at each preocular notch, one at each proximal end of latero-ventral margin, one pair on the occipital margin linked by a transverse band and by lighter bands to the preocular areas---------------------COLPOCEPHALUM
9. Latero-dorsal margin of head with a small protuberance bearing a seta; first two antennal segments with large distal expansions. Head triangular in outline. Large species; (4.0+)
pronotum with lateral flanges------------------------TRINOTON
Not as above----------------------------------------10

10. Head without preocular notch or slit; both sexes with a group of long stout setae on each postero-lateral angle of enlarged sternite II; third femora and abdominal sternites with or without brushes-----------------MYRSIDEA
Not as above----------------------------------------11

11. Prosternal plate with thickened margin and with more than two median setae; preocular notch or slit absent-----------------------------------------------12
Without all of the above combination of characters----------------13

12. Gular plate horseshoe shaped; temples greatly expanded laterally-------------------EUREUM
Gular plate not horseshoe shaped; temples not greatly expanded but broad and angulate--------DENNYUS

13. Head without preocular notch or slit; cavity between latero-dorsal and latero-ventral margins of head pouch-like--------------------------------15
Not as above----------------------------------------14

14. Head with narrow preocular slit; prosternal plate with a median pointed process; prosternum with two median setae-------------------EIDMANIELLA
Without above combination of characters----------------------17

15. Prosternal plate with more than two median setae; gular plate large with or without central perforation and lateral processes-------------------MACHAERILAEMUS
Prosternal plate with two median setae---------------------16

16. Prosternal plate with deeply serrated posterior margin-----------------------------------HOLOMENOPON
Prosternal plate without deeply serrated posterior margin------------------------AUSTROMENOPON

17. Prosternum with two median setae; mesosternum with more than two median setae; shallow preocular notch; head slightly wider than long; abdomen ovoid with sparse chaetotaxy; 3rd femora without brushes only 3-5 setae present------------------------BONOMIELLA
Prosternum with two or more median setae; abdomen narrowly elongate or elongate-ovoid--------------------------18
18. Temporal angles square or flatly rounded; brushes on third femora and sternite IV---ACTORNITHOPHILUS
Temple not as above-----------------------------19

19. Abdomen narrow; pleural plates very narrow; definite brush of setae on sternite IV only---MENOPON
Abdomen narrow; pleural plates well developed; brushes of setae on sternite IV and others-----------------AMYRSIDEA
ACTORNITHOPHILUS

Type species: *Colpocephalum unseriatum* Piaget, 1880.

Type species: *Actornithophilus (Diactornithophilus) svobodyae* Balat, 1953.

Type species: *Colpocephalum incisum* Piaget, 1880.

Menoponidae without sclerotized processes arising near base of maxillary palpi and without combs of spine-like setae on the venter of the third femora or any of the abdominal sternae. Antennal fossae never deep; preocular notch present, never a narrow preocular slit; anterior margin of head rounded, the temples very prominent, their anterior margins nearly at right angles to the longitudinal axis of the body; gular plate and setae present. Thorax distinctly three-segmented, the mesothorax small but clearly defined dorsally. Pro-, meso-, and metasternal plates present; two or three prosternal setae; mesosternal plate with one or more central setae. Third femora and abdominal sternite IV with thick or sparse brushes, sternite III and V may also have brushes but always less well developed than those on IV.
Actornithophilus bicolor (Piaget, 1880)

Colpocephalum bicolor Piaget, 1880. Les Pediculines: 56, pl. 47, fig. 1.


Type host: Arenaria interpres (Linnaeus)—Ruddy Turnstone.

Head with six short hairs on clypeal margin; eye distinct, with seta; temples prominent; ocular emargination deep and narrow; occipital margin slightly concave. Prothorax about twice as broad as long; prosternal setae not surrounded by the prosternal plate. Metathorax with sides broadly diverging; division between meso- and metathorax apparent. Posterior margin of metathorax straight with a row of long hairs. Metanotum with long anterior setae. Abdomen elongate-oval, broadest at third and fourth segments.

I have collected a single male Actornithophilus bicolor (Piaget) from Arenaria interpres (Linnaeus) Hampton, Rockingham County, New Hampshire, Sept. 9, 1965. Two skins of this species in the U. N. H. collection yielded no specimens of any Mallophaga. I have also collected a single female of this species from the skin of an Arctic Tern, Sterna paradisaea, in the bird skin collection at the University of New Hampshire. This last specimen is almost surely due to contamination.
Measurement of male from *Arenaria interpres* (Linnaeus)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>0.33</td>
</tr>
<tr>
<td>Head Width</td>
<td>0.51</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>0.36</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>0.48</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.17</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>0.59</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.93</td>
</tr>
</tbody>
</table>

Measurement of female from *Sterna paradisaea* Pontoppidan

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>0.31</td>
</tr>
<tr>
<td>Head Width</td>
<td>0.46</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>0.33</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>0.43</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>0.58</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>0.99</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.66</td>
</tr>
</tbody>
</table>

Carriker (1910) has collected this species in Michigan, and Kellogg and Mann (1912a) have reported it from Baja, California. Peters (1936) has reported an *Actornithophilus* sp. from a Ruddy Turnstone in Florida.

*Actornithophilus flumineus* Clay, 1962


Type host: *Actitis hypoleucos* (Linnaeus).

North American host:  
*Actitis macularis* (Linnaeus)—Spotted Sandpiper.
Measurements: | Type Male | Type Female |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.35</td>
<td>.37</td>
</tr>
<tr>
<td>Head Width</td>
<td>.43</td>
<td>.47</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.31</td>
<td>.33</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.41</td>
<td>.48</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.97</td>
<td>1.30</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.49</td>
<td>.64</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.70</td>
<td>2.08</td>
</tr>
</tbody>
</table>

These measurements are all from Mallophaga taken from the type host. Whether the measurements will be the same from those collected from Actitis macularis remains to be seen. I have examined two Spotted Sandpipers from New Hampshire without finding this species of Mallophaga.

Actornithophilus hoplopteri maculosus Carriker, 1963a.
Type host: Charadrius vociferus Linnaeus--Killdeer.

I have examined Killdeer from Brunswick, Maine, Sept. 4, 1964 and Sept. 12, 1965; Rochester, New Hampshire, May 30, 1965; Durham, New Hampshire, Sept. 4, 1965. No specimens of this Mallophaga have been found. (fig. 2).

Peters (1936) reports Actornithophilus aegialtitidis (Durrant, 1906) from a Killdeer in New Hampshire but this is an Austromenopon.

Actornithophilus limarius Clay, 1962
Actornithophilus limarius Clay, 1962. Brit. Mus. (N. H.), 11: 222, pl. 5, figs. 2 and 5; pl. 11, fig. 4.
Type host: Limnodromus scolopaceus (Say)--Long-tailed Dowitcher.
Other North American host: Limnodromus griseus (Gmelin)--Short-tailed Dowitcher.
Miss Clay described this species from 56 males and 45 females from *Limnodromus scolopaceus* in California and 55 males and 45 females from *L. griseus* in South Carolina.

I have collected a single immature specimen of *Actornithophilus* from *Limnodromus griseus* (Gmelin), Phippsburg, Maine, July 19, 1964. It is impossible to say whether it is *A. limnarius* Clay, 1962.

Measurements of *A. limnarius* Clay, 1962

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.32</td>
<td>.35</td>
</tr>
<tr>
<td>Head Width</td>
<td>.46</td>
<td>.49</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.34</td>
<td>.35</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.42</td>
<td>.48</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.15</td>
<td>1.38</td>
</tr>
<tr>
<td>Abodmen Width</td>
<td>.55</td>
<td>.66</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.85</td>
<td>2.12</td>
</tr>
</tbody>
</table>

*Actornithophilus ocellatus* (Rudow, 1869)


Type host: *Numenius phaeopus* (Linnaeus)--Whimbrel.

The National Museum has three slides of Mallophaga from the Whimbrel collected in New England, two from Newbury, Massachusetts, Sept. 13, 1921, Coll. A. B. Fuller, and one from Rye, New Hampshire, Sept. 19, 1933, Coll. L. R. Nelson. Neither of these contains this species. I have examined three Whimbrels all collected Sept. 9, 1965, at Phippsburg, Maine, by H. Tyler. All were infested with Mallophaga but none belong to this species. There are no records of this species being taken in the New England area.
Actornithophilus ochraceus (Nitzsch, 1818)


Type host: Pluvialis apricaria (Linnaeus)—Eurasian Golden Plover.

New England hosts:
Charadrius semipalmatus Bonaparte—Semipalmated Plover.
Charadrius melodus Ord—Piping Plover.
Pluvialis dominica (Müller)—American Golden Plover. (Occasional in New England associated with Fall easterly storms).
Squatarola squatarola (Linnaeus)—Black-bellied Plover.

Material examined: Charadrius semipalmatus Bonaparte

Brunswick, Maine Sept. 1, 1964 H. Tyler
Rye, N. H. Sept. 4, 1965 B. Barrett

The Brunswick, Maine, material yielded one male Actornithophilus ochraceus and one immature A. ochraceus.

Charadrius melodus Ord.

Phippsburg, Maine Sept. 16, 1965 H. Tyler

Actornithophilus ochraceus was not found.

Pluvialis dominica (Müller)

None.

Squatarola squatarola (Linnaeus)

Brunswick, Maine Oct. 27, 1964 H. Tyler

The Hampton, New Hampshire, specimen yielded 2 males and 6 females of A. ochraceus. The Brunswick, Maine, specimen yielded a single immature Actornithophilus sp.
Measurements of *A. ochraceus* from *Squatarola squatarola*

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Two males</th>
<th>6 females (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.31 .33</td>
<td>.33 - .36</td>
</tr>
<tr>
<td>Head Width</td>
<td>.48 .48</td>
<td>.48 - .55</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.33 .31</td>
<td>.34 - .37</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.42 .40</td>
<td>.46 - .51</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.92 .91</td>
<td>1.09 - 1.27</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.57 .54</td>
<td>.64 - .73</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.62 1.54</td>
<td>1.80 - 2.01</td>
</tr>
</tbody>
</table>

Peters (1928) has reported this species from Ohio, and Peters (1936) reports it from Georgia, Illinois, and South Carolina. Brimley (1938) reports it from North Carolina.

*Actornithophilus paludosus* Clay, 1962

- Type host: *Tringa nebularia* (Gunnerus)
- North American host: *Totanus melanoleucus* (Gmelin)—Greater Yellowlegs.

This species is recognized by the presence of long dorsal setae on the metathorax and by the prosternal plate not enclosing the prosternal setae.

Material examined: *Totanus melanoleucus* (Gmelin)


3 males, 3 females, and 1 imm. *A. paludosus* were collected.
Measurements of *A. paludosus* from *Totanus melanoleucus* (Gmelin)

<table>
<thead>
<tr>
<th></th>
<th>3 males</th>
<th></th>
<th>3 females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Head Width</td>
<td>.46</td>
<td>.49</td>
<td>.46</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.31</td>
<td>.34</td>
<td>.33</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.40</td>
<td>.42</td>
<td>.40</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.06</td>
<td>1.08</td>
<td>1.06</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.49</td>
<td>.54</td>
<td>.52</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.68</td>
<td>1.78</td>
<td>1.77</td>
</tr>
</tbody>
</table>

*Actornithophilus pediculoides* (Mjöberg, 1910)


Type host: *Arenaria interpres* (Linnaeus)—Ruddy Turnstone.

I have examined three specimens of *Arenaria interpres* (Linnaeus) (see *A. bicolor*) without finding this species. Since the original description, the only other collection has been made in the Philippine Islands. Emerson (1956) placed this species in the genus *Longimenopon* because of the characters of the head and the abdominal chaetotaxy. However, Clay (1962) because of the brush of setae on sternite IV, characteristic of *Actornithophilus* but not of *Longimenopon*, placed it in the genus *Actornithophilus*. For a figure of this rare species see Emerson (1956a).
Actornithophilus piceus lari (Packard, 1870)


Colpocephalum fuscipes Piaget, 1880. Les Pediculines; 567, pi. 47, fig. 7.


Type host: Larus marinus Linnaeus--Great Black-backed Gull.

Other New England hosts:

Larus hyperboreus Gunnerus--Glaucous Gull
Larus argentatus Pontoppidan--Herring Gull
Larus delawarensis Ord--Ring-billed Gull
Larus atricilla Linnaeus--Laughing Gull
Larus philadelphia (Ord)--Bonaparte's Gull
Rissa tridactyla (Linnaeus)--Black-legged Kittiwake

Actornithophilus piceus lari (Packard, 1870) has been reported from New Jersey (Anon. 1909), Ohio (Peters, 1928), North Carolina (Brimley, 1938) and from Quebec (Whitehead, 1954).

Material examined: Larus argentatus Pontoppidan

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danvers, Mass.</td>
<td>Aug. 19, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Rye, N. H.</td>
<td>Aug. 23, 1964</td>
<td>F. Kruger</td>
</tr>
<tr>
<td>Malden, Mass.</td>
<td>? ? 1965</td>
<td>Coll. ?</td>
</tr>
</tbody>
</table>

All the above, except the bird from Rye, New Hampshire, were infested with Mallophaga but none harbored A. piceus lari (Packard, 1870).

Material examined: Larus marinus Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marshfield, Mass.</td>
<td>Dec. 30, 1930</td>
<td>5 USNM slides</td>
</tr>
<tr>
<td>Marshfield, Mass.</td>
<td>Dec. 30, 1930</td>
<td>2 USNM slides</td>
</tr>
<tr>
<td>Marshfield, Mass.</td>
<td>Dec. 30, 1930</td>
<td>1 USNM slide</td>
</tr>
<tr>
<td>Marshfield, Mass.</td>
<td>Dec. 30, 1930</td>
<td>MCZ slide</td>
</tr>
<tr>
<td>Marshfield, Mass.</td>
<td>Dec. 30, 1930</td>
<td>MCZ slide</td>
</tr>
</tbody>
</table>

One slide from the National Museum, containing one male and two females, and one slide from the MCZ contained A. piceus lari (Packard, 1870). Peters (1936) reports it from Massachusetts.
Larus hyperboreus Gunnerus

I examined one vial in the MCZ collection with the data, Rockport, Massachusetts, April 20, 1918. There were no Mallophaga in the vial.

Material examined: Larus delawarensis Ord

No Locality No Date U. N. H. Coll.

A. piceus lari was not found.

Larus philadelphica (Ord)

I collected three specimens at Hampton, New Hampshire, Oct. 10, 1964. They were free of Mallophaga.

Rissa tridactyla (Linnaeus)

A single bird - Isleford, Maine, March 27, 1936, AEB - was free of this species of Mallophaga, although infested with two other species.

Actornithophilus piceus piceus (Denny, 1842)


Colpocephalum sulcatum Piaget, 1880. Les Pediculines: 565, pl. 47, fig. 5.

Colpocephalum crassipes Piaget, 1880. Les Pediculines: 566, pl. 47, fig. 6.


Type host: Thalasseus sandwicensis (Latham)--Sandwich Tern.

New England hosts:

Sterna hirundo Linnaeus--Common Tern.
Sterna paradisaea Pontoppidan--Arctic Tern.
Sterna dougallii Montagu--Roseate Tern.
Sterna albifrons Pallas--Least Tern.
Thalasseus maximus (Boddaert)--Royal Tern (Rare).
Clay (1962) states concerning *A. piceus lari* (Packard, 1870) and *A. piceus piceus* (Denny, 1842): "The populations of *Actornithophilus* found on the Laridae have not been revised in detail, and must wait for a larger amount of material from more host species. In general, individuals from the Sterninae (i.e., *piceus* Denny) are smaller than those from the Larinae (i.e., *lari* Packard)."

Measurements from *A. piceus piceus* and *A. piceus lari* (ranges)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>piceus</em></td>
<td>0.61 - 0.67</td>
<td>0.67 - 0.73</td>
</tr>
<tr>
<td><em>lari</em></td>
<td>0.71 - 0.74</td>
<td>0.77 - 0.80</td>
</tr>
</tbody>
</table>

Material examined: *Sterna hirundo* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick, Maine</td>
<td>Aug. 22, 1965</td>
<td>H. Tyler</td>
<td></td>
</tr>
<tr>
<td>Newington, N. H.</td>
<td>Aug. 30, 1965</td>
<td>B. Smith</td>
<td></td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
<td></td>
</tr>
</tbody>
</table>

None of the above were infested with *A. piceus piceus* (Denny, 1842).

Material examined: *Sterna paradisaea* Pontoppidan

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship Isle, Maine</td>
<td>No Date</td>
<td>Cornell Coll.</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

None of the above were infested with *A. piceus piceus* (Denny, 1842).

Material examined: *Sterna dougallii* Montague

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seabrook, N. H.</td>
<td>Aug. 15, 1933</td>
<td>L. R. Nelson</td>
<td>(USNM Slide)</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
<td>(3 birds)</td>
</tr>
</tbody>
</table>

No specimens of *A. piceus piceus* (Denny, 1842) were found.
Sterna albifrons Pallas

No birds of this species were seen.

Thalasseus maximus (Boddaert)

Hampton, N. H. Sept. 1, 1954 D. Dupee

No specimens of this species of Mallophaga were collected.

Actornithophilus sabulosus Clay, 1962

Actornithophilus sabulosus Clay, 1962. Bull. Brit. Bus (N. H.), Ent., 11: 228, pl. 4, fig. 3; pl. 9, fig. 1 and text fig. 7, 12, 18, 61, and 62.

Type host: Charadrius semipalmatus Bonaparte—Semipalmated Plover.

In this species the metanotum has no long anterior setae; pleurites without well marked pattern of internal thickening and posterior margin of mesosome with well marked pointed projections on each side. Preocular emargination as in text fig. 1.

![Text Fig. 1.](image)

Material examined: Charadrius semipalmatus Bonaparte

Brunswick, Maine Sept. 1, 1964 H. Tyler

Rye, N. H. Sept. 4, 1965 B. Barrett

One male and one immature from Brunswick, Maine, material. One immature Actornithophilus sp. from Rye, New Hampshire, material.
Actornithophilus stictus (Kellogg and Paine, 1911)
Type host: Capella gallinago (Linnaeus)—Common Snipe.

Described from a single male specimen with measurements:

- Head Length: .34
- Head Width: .40
- Thorax Width: .34
- Abdomen Length: .78
- Abdomen Width: .42
- Total Length: 1.40

I have examined one Common Snipe in the U. N. H. Collection (no data) without finding this species. The original description from a snipe collected at Monterrey, California, appears to be the only published record of this species.

Actornithophilus totani (Schrank, 1803)
Type host: Totanus totanus (Linnaeus)—Redshank.
New England host: Totanus flavipes (Gmelin)—Lesser Yellowlegs.

This species is recognized by the absence of long anterior setae on the metanotum, by the prosternal plate surrounding the prosternal setae, and by the presence of anterior dorsal setae on the last segment of the abdomen in the male. In the female at least two or more tergites have seven or more central setae and tergites II-VIII have a row of anterior setae.
Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.36</td>
<td>.37</td>
</tr>
<tr>
<td>Head Width</td>
<td>.50</td>
<td>.52</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.35</td>
<td>.36</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.45</td>
<td>.51</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.17</td>
<td>1.49</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.55</td>
<td>.70</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.93</td>
<td>2.69</td>
</tr>
</tbody>
</table>

Material examined: Totanus flavipes (Gmelin)

No Locality No Date U. N. H. Coll.

A. totani was not found.

**Actornithiphilus umbrinus** (Burmeister, 1838)

Colpocephalum trilobatum Giebel, 1874. *Insecta Epizoa*: 275.
Colpocephalum umbrinum Piaget, 1880 (nec Burmeister, 1838). *Les Pediculines*: 556, pl. 46, fig. 6.


**Actornithophilus hirsutus** Carriker, 1954. *Florida Ent.*, 37: 139, fig. 1.

Type host: *Erolia testacea* (Pallas)--Curlew Sandpiper.

New England hosts:

**Actitis macularis** (Linnaeus)--Spotted Sandpiper.
**Calidris canutus** (Linnaeus)--Knot.
**Erolia maratima** (Brünnich)--Purple Sandpiper.
**Erolia melanotos** (Vieillot)--Pectoral Sandpiper.
**Erolia minutilla** (Vieillot)--Least Sandpiper.
**Erolia alpina** (Linnaeus)--Dunlin.
**Ereunetes pusillus** (Linnaeus)--Semipalmated Sandpiper.
**Crocethia alba** (Pallas)--Sanderling.
Male: Head typical of the genus, temples prominent; ocular emarginations rather deep; eyes large. Two long and two short setae on each lateral margin of the gular region. Thorax three segmented; mesothorax one-half the length of the metathorax. Prothoracic sternal plate without setae on the posterior margin. Four long setae on the posterior margin of the patch of spines on the venter of the third femur.

Female: Larger than the male but of the same general shape. Setae on the dorsum of the female are less numerous and all are larger than on the male.

Material examined: *Actitis macularis* (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>Collectors</th>
</tr>
</thead>
</table>

No Actornithophilus umbrinus (Burmeister, 1838) found.

Material examined: *Calidris canutus* (Linnaeus)

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phippsburg, Maine</td>
<td>Sept. 1, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

This collection yielded 1 female A. umbrinus.

Material examined: Slides

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seabrook, N. H.</td>
<td>Sept. 16, 1935</td>
<td>L. R. Nelson</td>
</tr>
</tbody>
</table>

Material examined: *Erolia maratima* (Brünnich)

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collectors</th>
</tr>
</thead>
</table>

No A. umbrinus (Burmeister, 1838) found.

Material examined: *Erolia melanotos* (Vieillot)

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick, Maine</td>
<td>Sept. 13, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

This bird was free of A. umbrinus.
Material examined: *Erolia minutilla* (Vieillot)

No Locality No Date U. N. H. Coll.

No Mallophaga were found.

Material examined: *Erolia alpina* (Linnaeus)


*Actornithophilus umbrinus* (Burmeister, 1838) was seen from the material collected by Peters.

Material examined: *Ereunetes pusillus* (Linnaeus)

No Locality No Date U. N. H. Coll.

Both the Madbury and Hampton collections contained a single female of this species.

Material examined: *Crocethia alba* (Pallas)

Nahant, Mass. Sept. 24, 1914 (USNM Slide)
Nahant, Mass. Sept. 24, 1914 (M. C. Z. Slide)
Charlestown, R. I. July 24, 1961 L. Terbush

The USNM slide contained *A. umbrinus* (Burmeister, 1838). The M. C. Z. material contained a single immature *Actornithophilus* sp.

Measurements: Female *A. umbrinus* from *Ereunetes pusillus* (L.)

Head Length .31
Head Width .43
Prothorax .33
Metathorax .45
Abdomen Length 1.18
Abdomen Width .61
Total Length 1.89
AMYRSIDEA

   Type species: Menopon ventrale Nitzsch, 1866.

   Type species: Argimenopon polytrichum Eichler, 1947.

   Type species: Cracimenopon mituensis Carriker, 1954a.

   Type species: Amyrsidea praegracilis Carriker, 1950.

Forehead reduced and evenly rounded in front; laterodorsal margin
with shallow notch or narrow preocular slit; antennal fossae covered by
a transversely sutured expansion of the head; antennae five segmented,
the third segment showing a suture at the base, the fifth segment
elongate and cylindrical. Eyes absent. Gular plate well developed.
Prosternum with two median setae, mesosternum with more than two median
setae. Legs with first tibia without spurs at distal end; second and
third tibiae provided with tibial spurs. Third femora and sternites
III-IV or V, IV-V or IV-VI with thick or scattered brushes of small and
normal setae; sternites III and VII may have more scattered brushes;
sternal brushes may be absent; abdomen with or without internal pleural
thickening.
**Amyrsidea megalosoma** (Overgaard, 1943)


Type host: *Phasianus colchicus* Linnaeus—Ring-necked pheasant.

Other New England hosts:

**Bonasa umbellus** (Linnaeus)—Ruffed Grouse.

In the medial part of each abdominal segment a group of posteriorly directed long hairs are found. Two parallel rows of 4-6 long hairs are found on the posterior margin of the ventral aspect of the head. Lateral edges of the abdominal pleurites protruding and dark brown. (fig. 3).

Measurements of 10 ♂ and 10 ♀ (Averages).

<table>
<thead>
<tr>
<th>Measurement</th>
<th>♂</th>
<th>♀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.34</td>
<td>.35</td>
</tr>
<tr>
<td>Head Width</td>
<td>.64</td>
<td>.68</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.83</td>
<td>2.19</td>
</tr>
</tbody>
</table>

Material examined: *Phasianus colchicus* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haverhill, Mass.</td>
<td>Apr. 5, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 1, 1964</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 6, 1964</td>
<td>G. L. Walker</td>
</tr>
</tbody>
</table>

**Amyrsidea megalosoma** was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winchester, N. H.</td>
<td>July 20, 1932</td>
<td>L. R. Nelson</td>
</tr>
<tr>
<td>West Greenwich, R. I.</td>
<td>April 15, 1958</td>
<td>J. A. Mathewson</td>
</tr>
</tbody>
</table>
**Bonasa umbellus** (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madbury, N. H.</td>
<td>Nov. 16, 1963</td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Barrington, N. H.</td>
<td>Aug. 21, 1964</td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Pittsfield, N. H.</td>
<td>March 2, 1964</td>
<td>A. H. Mason</td>
</tr>
<tr>
<td>Madbury, N. H.</td>
<td>Jan. 4, 1965</td>
<td>A. H. Mason</td>
</tr>
<tr>
<td>Raymond, N. H.</td>
<td>Oct. 6, 1965</td>
<td>D. W. Sutherland</td>
</tr>
</tbody>
</table>

No specimens of *Amyrisidea megalosoma* (Overgaard, 1943) were found in any of the above collections.
AUSTROMENOPON

  Type species: * Menopon crocatum * Nitzsch, 1866.

  Type species: * Menopon cinerea * Thompson, 1939.

Head about twice as broad as long; the laterodorsal margins without
a preocular notch or slit; cavity between laterodorsal and lateroven-
tral margins of head pouch-like and usually deep, with a basal thick-
ening passing up to the laterodorsal margin and not roofed over distally
by the fusion between dorsal and ventral margins. Antennae four seg-
mented. Prosternum with two median setae; prosternal plate without
deeply serrated posterior (cf. Holomenopon). Legs normal; hind femora
with a few setae on the venter, not sufficiently numerous to form a
brush; mid and hind tibiae with three setae, two or three spine-like
on ventral apex. Abdomen elongate oval, with the tergal, sternal and
paratergal plates well developed. Male genitalia with the basal plate
short, narrow in front and gradually broadening towards the apex where
it is expanded; parameres present.
Austromenopon aegialitidis (Durrant, 1906)


Type host: Charadrius vociferus Linnaeus—Killdeer.

Other New England hosts:
- Charadrius semipalmatus Bonaparte--Semipalmated Plover.
- Charadrius melodus Ord--Piping Plover.

Described from a female collected at Fort Collins, Colorado.

Measurements:
- Head Length .29
- Head Width .48
- Thorax Width .47
- Total Length 1.30

Peters (1928) and Geist (1931) have reported this species from Ohio and Peters (1936) has reported it from Alabama, Louisiana, New Hampshire, South Carolina and Virginia. Emerson (1940) reports it from Oklahoma.

Material examined: Charadrius vociferus Linnaeus
- Brunswick, Maine Sept. 4, 1964 H. Tyler
- Rochester, N. H. May 30, 1965 B. Smith
- Durham, N. H. Sept. 4, 1965 B. Barrett
- Brunswick, Maine Sept. 12, 1965 H. Tyler

Material examined: Charadrius semipalmatus Bonaparte
- Brunswick, Maine Sept. 1, 1964 H. Tyler
- Rye, N. H. Sept. 4, 1965 B. Barrett

Material examined: Charadrius melodus Ord
- Phippsburg, Maine Sept. 18, 1965 H. Tyler

No specimens of Austromenopon aegialitidis (Durrant, 1906) have been recovered from any of the above collections.

Austromenopon alpinum Timmermann, 1954c


Type host: Erolia alpina (Linnaeus)--Dunlin.
Timmermann (1954c) described this species from a♂ calling it a small colorless species with the measurements: Head width 0.40, Head length 0.23, and Total length 1.17. Clay (1959) includes this species in the lutescens group which includes A. lutescens (Burmeister) from Philomachus pugnax, A. alpinum Timmermann from Calidris alpina, and the populations from Crocethia alba, Arenaria and Tringa. She states that, "Except for lutescens, too little material of this group has been seen to make a decision on the status of these populations."

Material examined: Erolia alpina (Linnaeus)


Austromenopon alpinum Timmermann, 1954c was not found.

Austromenopon atrofulvum (Piaget, 1880)

Menopon atrofulvum Piaget, 1880. Les Pediculines: 483, pl. 39, fig. 2.
Type host: Thalasseus bergi (Lichtenstein).
Sterna paradisaea Pontoppidan—Arctic Tern.
Sterna dougallii Montagu—Roseate Tern.
Sterna albifrons Pallas—Least Tern.
Material examined:  **Sterna hirundo** Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Location</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
<tr>
<td>Brunswick, Maine</td>
<td>Aug. 22, 1965</td>
<td>H. Tyler</td>
</tr>
<tr>
<td>Newington, N. H.</td>
<td>Aug. 30, 1965</td>
<td>B. Smith</td>
</tr>
</tbody>
</table>

Material examined:  **Sterna paradisaea** Pontoppidan

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

Material examined:  **Sterna dougallii** Montagu

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
</table>

No material from **Sterna albifrons** Pallas was seen.

**Austromenopon atrofulvum** (Piaget, 1880) was not found on any of the above birds.

Peters (1936) lists Menopon sp. from **Sterna dougallii** Montagu from Massachusetts. This is probably an **Austromenopon atrofulvum** and is the only recorded mention of a collection from the New England area.

**Austromenopon corporosum** (Kellogg and Kuwana, 1900)


Type host:  **Phalaropus fulicarius** (Linnaeus)--Red Phalarope.

This species along with **A. spenceri** Timmermann from **Lobipes lobatus** (Linnaeus)--Northern Phalarope may eventually be found in New England. I have shot a single Red Phalarope in Newington, N. H., Aug. 30, 1965, and have never collected a Northern Phalarope in this area.

They are mentioned together because Clay (1959) states that, "There is insufficient material available to show whether **A. spenceri** Timmermann, 1956, can be separated from **corporosum**."
Austromenopon durisetosum (Blagoveshtchensky, 1948)

This species has not been recorded from the United States and beyond the fact that it is parasitic upon the Common Snipe, I have no information concerning it.

Material examined: Capella gallinago (Linnaeus)

No Locality No Date U. N. H. Coll.
A. durisetosum was not found.

Austromenopon merguli Timmermann, 1954c
Type host: Plautus alle (Linnaeus)—Dovekie.

When Peters (1936) recorded Holomenopon loomisii (Kellogg and Chapman) from the Dovekie in Massachusetts, Pennsylvania, and South Carolina, he undoubtedly meant this species of Austromenopon.

I have made thirteen collections of Dovekies from Maine, New Hampshire, and Massachusetts. Collections revealing this species are:

1 ♀ Mt. Desert Isl., Maine Dec. 3, 1934 A. E. Brower
1 ♂ 3 ♂ Bar Harbor, Maine Nov. 24, 1937 A. E. Brower
1 ♀ Durham, N. H. Dec. 7, 1962 Coll. ?

Measurements: 1 ♂ 5 ♀ (Average)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>♀</th>
<th>♂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.22</td>
<td>.25</td>
</tr>
<tr>
<td>Head Width</td>
<td>.42</td>
<td>.48</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.34</td>
<td>.41</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>-</td>
<td>.50</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.69</td>
<td>.94</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.58</td>
<td>.70</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.15</td>
<td>1.56</td>
</tr>
</tbody>
</table>
A single specimen of this species was also seen in the USNM Collection taken at Osterville, Massachusetts, January 21, 1931. However, measurements were not taken.

**Austromenopon nigropleurum** (Denny, 1842)


Type host: *Alca torda* Linnaeus—Razorbill.

*Austromenopon* species from the Alcidae have many of the dorsal head setae spine-like (Clay, 1959). The Razorbill is an infrequent bird off the coast of New England in the winter months. I have examined a single specimen confiscated by federal game wardens on Plum Island Wildlife Refuge, Essex County, Massachusetts. It was free of all Mallophaga. This species could be collected in New England.

**Austromenopon phaeopodis** (Schrank, 1802)


Type host: *Numenius phaeopus* (Linnaeus)—Whimbrel.

Material examined: *Numenius phaeopus* (Linnaeus)

Phippsburg, Maine Sept. 9, 1965 H. Tyler (2 birds)

One of the Whimbrels collected in Phippsburg, Maine, contained 3 female *Austromenopon phaeopodis* (Schrank, 1802). (fig. 4).
Measurements: 3 ♀

<table>
<thead>
<tr>
<th></th>
<th>♀</th>
<th>♂</th>
<th>♂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.28</td>
<td>.27</td>
<td>.30</td>
</tr>
<tr>
<td>Head Width</td>
<td>.51</td>
<td>.54</td>
<td>.57</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.43</td>
<td>.42</td>
<td>.43</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.51</td>
<td>.51</td>
<td>.55</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.02</td>
<td>1.09</td>
<td>1.23</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.75</td>
<td>.78</td>
<td>.82</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.66</td>
<td>1.72</td>
<td>1.90</td>
</tr>
</tbody>
</table>

Clay (1959) has erected a neotype of this species and gives an excellent figure of it.

_Austromenopon squatarolae_ Timmermann, 1954c


Type host: *Squatarola squatarola* (Linnaeus)—Black-bellied Plover.

Timmermann (1954c) gives the following measurements:

<table>
<thead>
<tr>
<th></th>
<th>Head Width</th>
<th>Head Length</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>♀</td>
<td>0.46</td>
<td>0.25</td>
<td>1.35</td>
</tr>
<tr>
<td>♂</td>
<td>0.56</td>
<td>0.28</td>
<td>1.85</td>
</tr>
</tbody>
</table>

The types of this species were collected in California in 1939.

Material examined: *Squatarola squatarola* (Linnaeus)


All the above were free of _A. squatarolae_ Timmermann, 1954.
Austromenopon transversum (Denny, 1842)


Type host: Rissa tridactyla (Linnaeus)—Black-legged Kittiwake.

New England hosts:

- Larus hyperboreus Gunnerus—Glaucous Gull.
- Larus argentatus Pontoppidan—Herring Gull.
- Larus delawarensis Ord—Ring-billed Gull.
- Larus atricilla Linnaeus—Laughing Gull.
- Larus philadelphia (Ord)—Bonaparte's Gull.

The material examined for this species of Mallophaga is exactly the same as the material for Actornithophilus piceus lari (Packard, 1870) (Pg. 28). No specimens of Austromenopon transversum were found in any of the collections made in the field. I have seen a single mounted specimen of this species collected from Pagophila eburnea (Phipps)—Ivory Gull at Boothbay Harbor, Maine, Jan. 1, 1952 by Dr. A. O. Gross (USNM Slide). No extensive work has been done on the various populations infesting the various members of the Larinae perhaps due as much to lack of material as to lack of workers. Sufficient collecting is sure to reveal the presence of Austromenopon transversum on all members of New England Larinae.

Austromenopon uriae Timmermann, 1954c


Type host: Uria aalge (Pontoppidan)—Common Murre.
Despite its name the Common Murre is an uncommon bird in New England. I have never captured one to examine it for Mallophaga and I include it here because it is the type host for A. uriae and sufficient collecting will undoubtedly reveal its presence.

Type species: Bonimielia insolitanguicolata Conci, 1942.

Head slightly broader than long; laterodorsal margin with a shallow preocular notch backed by a narrow, sclerotized area. The terminal segment of the antenna is short and irregular in shape. Ventral surface of the posterior femur with three to five hair-like setae but no definite brush. Abdomen ovoid with scattered brushes of spine-like setae. Marked sexual dimorphism, the male being much smaller than the female.
Bonomiella cloumbae Emerson, 1957a


Type host: Domestic Pigeon.

Other New England host:
Zenaidura macroura (Linnaeus)—Mourning Dove.

Emerson (1957a) after examining twenty-six domestic pigeons, collected nine specimens of B. columbae. These were from Leavenworth, Kansas. This is the only known collection of this species, to date, in the United States.

I have examined eighteen domestic pigeons from Maine, Vermont, New Hampshire, and Massachusetts and have found a single female of Bonomiella columbae in a collection made by R. L. Blickle, Portland, Maine, Feb. 10, 1958.

The genus description plus fig. 5 will serve to identify this species.

Measurements: Bonomiella columbae Emerson, 1957a

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.28</td>
</tr>
<tr>
<td>Head Width</td>
<td>.37</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.27</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.45</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.23</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.87</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.84</td>
</tr>
</tbody>
</table>
CICONIPHILUS

Type species: *Colpocephalum quadripustulatum* Burmeister, 1838.

Type species: *Colpocephalum pectiniventre* Harrison, 1916.

Head about one-third wider than long; anterior margin of forehead and temples rounded; ocular notch present, deep; eyes well developed; antennae four segmented; second segment with a lateral expansion, third segment narrow at base, apex large and broadly joined to the terminal segment; occipital margin concave; ocular blotches dark, well developed; occipital blotches generally reduced, internal bands between the blotches faint unlike those of *Colpocephalum*. Prothorax wider than long with acute wings; anterior one-third with a dorsal transverse bar. Pterothorax much wider than long; lateral margins converging anteriorly. Legs normal, femora III with combs of setae on the ventral surface. Abdomen elongate-oval with well developed tergites, pleurites and sternites; terminal abdominal segment rounded; posterolateral angle of sternite III with two combs of spines.

Price and Beer (1965) have recently revised this genus.
Ciconiphilus decimfasciatus (Boisduval and Lacordaire, 1835)


Colpocephalum importunum major Piaget, 1880. Les Pediculines: 549, pl. 12, fig. 8.


Colpocephalum castaneum Piaget, 1885. Les Pediculines, Supplement: 153, pl. 16, fig. 7.


Type host: Ardea cinerea Linnaeus.

New England hosts:
Ardea herodias Linnaeus—Great Blue Heron.
Casmerodius albus (Linnaeus)—Common Egret.
Nycticorax nycticorax (Linnaeus)—Black crowned Night Heron.
Botaurus lentiginosus (Rackett)—American Bittern.

This species is recognized by the presence of weakly developed occipital nodi, the subocular comb of setae preceded by only one or two medium setae, pro sternum with a single pair of median setae, margin of metanotum with ten long setae, metasternal plate with eight to ten setae, female without inner anal setae, male with fewer than eight anterior setae on the majority of tergites II-VI, and female with abdominal tergites II-VI having more than 3 anterior setae. (fig. 6).

Material examined: Ardea herodia Linnaeus

<table>
<thead>
<tr>
<th>No Localiry</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
</table>

C. decimfasciatus was not found.
Material examined: Slides.

Bar Harbor, Maine Sept. 1, 1936 A. E. B.

1 male and 3 female C. decimfasciatus were seen.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>3 Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.31</td>
<td>.36 .33 .36</td>
</tr>
<tr>
<td>Head Width</td>
<td>.46</td>
<td>.63 .60 .58</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.37</td>
<td>.42 .42 .41</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.42</td>
<td>.55 .49 .52</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.75</td>
<td>1.18 1.18 1.11</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.63</td>
<td>.82 .76 .76</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.26</td>
<td>1.86 1.74 1.80</td>
</tr>
</tbody>
</table>

Material examined: Florida caerulea (Linnaeus)

None

Material examined: Slides.

Winchester, N. H. Oct. 17, 1932 L. R. Nelson (USNM Slide)

1 female C. decimfasciatus.

Material examined: Casmerodius albus (Linnaeus)

None

Material examined: Nycticorax nycticorax (Linnaeus)


C. decimfasciatus was not found.

Material examined: Botaurus lentiginosus (Rackett)


C. decimfasciatus was not found.
Ciconiphilus melanolophi Price and Beer, 1965

Type host: Gorsachius melanolophus (Raffles).
New England host: Butorides virescens (Linnaeus)—Green Heron.

This species is very similar to C. decimfasciatus (Boisduval and Lacordaire, 1835) except for the presence of 0-3 anterior setae on female abdominal tergites II-VI, whereas in C. decimfasciatus there are more than 3.

Material examined: Butorides virescens (Linnaeus).

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>July 30, 1965</td>
<td>J. E. K. (2 birds)</td>
</tr>
</tbody>
</table>

All birds examined were free of this species of Mallophaga.

Ciconiphilus pectiniventris (Harrison, 1916)


Type host: Domestic Goose.
New England hosts:
Branta canadensis (Linnaeus)—Canada Goose.
Branta bernicla (Linnaeus)—Brant.

This species is distinguished from all others of the genus by the presence of a very short seta as the second seta from the margin of the metanotum and on abdominal tergite I. This species is found only on the subfamily Anserinae, the geese.

Material examined: Branta canadensis (Linnaeus)

| Newmarket, N. H. | Oct. 16, 1964 | Coll. ? |
Material examined: *Branta bernicla* (Linnaeus)

<table>
<thead>
<tr>
<th></th>
<th>Hampton, N. H.</th>
<th>Nov. 8, 1964</th>
<th>B. Barrett</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hampton, N. H.</td>
<td>Oct. 28, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

I have collected 1 male *C. pectiniventris* (Harrison, 1916) from one Canada Goose, (Newmarket, N. H., Oct. 16, 1964), and 4 females from a single Brant, (Hampton, N. H., Nov. 8, 1964).

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>1 Male</th>
<th>4 Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.27</td>
<td>.28</td>
</tr>
<tr>
<td>Head Width</td>
<td>.51</td>
<td>.54</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.36</td>
<td>.40</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.42</td>
<td>.49</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.02</td>
<td>1.24</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.58</td>
<td>.78</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.71</td>
<td>1.95</td>
</tr>
</tbody>
</table>

* Abdomen ruptured along lateral margin.
COLPOCEPHALUM

Type species: Colpocephalum zebra Burmeister, 1838
(By designation by the International Commission of Zoological Nomenclature).

Type species: Colpocephalum turbinatum Denny, 1842.


Pseudocolpocephalum Qadri, 1936. Z. Parasit., 8: 640.
Type species: Pseudocolpocephalum uchidi Qadri, 1936.

Type species: Colpocephalum semicinctum Rudow, 1866
(A synonym of Colpocephalum fregili Denny, 1842).

Type species: Colpocephalum subaequale Burmeister, 1838
(A synonym of Colpocephalum fregili Denny, 1842).

Type species: Colpocephalum spineum Kellogg, 1899.

Type species: Colpocephalum appendiculatum Nitzsch, 1866.

Type species: Colpocephalum leptopygus Nitzsch, 1874.

Type species: Colpocephalum eucarenum Burmeister, 1838.

Type species: Galliferrisia tausi Ansari, 1951.

Type species: Cuculiphilus (Picusphilus) tirkhan Ansari, 1951.

Type species: Colpocephalum breve Giebel, 1866.

Type species: Colpocephalum scopinum Mjoberg, 1910.

Type species: Colpocephalum kelloggii Osborn, 1902.
Type species: Gypsogogus novoannus Eichler and Zlotorzycka, 1963.

Type species: Allocolpocephalum (Lanicephalum) lamidorum Zlotorzycka, 1964. (Probably a synonym of C. fregili Denny, 1842).

Head with pronounced ocular emarginations; temporal lobes with square or flatly rounded, never tapering, ends. Laterodorsal margin of head with preocular notch or short, broad slit. Head with conspicuous dark brown or black sclerotized areas, one at each preocular notch, one at each proximal end of laterodorsal margin, and one pair on the occipital margin lined by a dark, transverse band and a lighter, transverse band to the preocular areas. Mesothorax short, length less than that of the pro- and metathorax taken together. Basal segment of each tarsus only slightly produced distally. Ventral surface of posterior femur, and some abdominal sternites, without definite patches of setae although combs of spines may be present. Mallophaga of moderate size but seldom exceeding three millimeters in length.
Colpocephalum brachysomum Kellogg and Chapman, 1902


Type host: *Asio flammeus* (Pontoppidan)— Short-eared Owl.

Other New England host: *Bubo virginianus* (Gmelin)— Great Horned Owl.

This species was described from 2 ♂ from *Asio flammeus* (Pontoppidan) and 2 ♀ from *Pluvialis dominica* (Muller) — an error.

Colpocephalum discrepans was described from 1 ♂ from *Anous stolidus* (Linnaeus) both of which are errors.

Price and Beer (1963) have reviewed the species of *Colpocephalum* infesting the Strigiformes and give the following measurements for this species:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.35</td>
<td>.37</td>
</tr>
<tr>
<td>Head Width</td>
<td>.56</td>
<td>.60</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.38</td>
<td>.39</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.46</td>
<td>.55</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.08 (Short Form)</td>
<td>1.47 (Short Form)</td>
</tr>
</tbody>
</table>
<pre><code>        | 1.59 (Long Form)  | 1.84 (Long Form)  |
</code></pre>

The long form is due to telescoping of the abdomen during mounting on microscope slides. The measurements are the averages of 4 males and 8 females.

Material examined: *Asio flammeus* (Pontoppidan)

Middletown, Conn. Nov. 15, 1925 O. L. Austin, Jr. (USNM Slide)
Material examined: **Bubo virginianus** (Gmelin)

- Wenham, Mass. Oct. 9, 1928 USNM Slide
- Lincoln, Maine Jan.-June, 1941 Coll. ?

All birds examined were free of **Colpocephalum brachysomum** Kellogg and Chapman, 1902.

**Colpocephalum flavescens** (deHaan, 1829)


Type host: **Haliaeetus albigilla** (Linnaeus)

New England hosts:
- *Aquila chrysaetos* (Linnaeus)— Golden Eagle.
- *Haliaeetus leucocephalus* (Linnaeus)— Bald Eagle.

Price and Beer (1963a) in their review of the **Colpocephalum** species parasitic upon the Falconiformes, list the following features characteristic to the flavescens group, which includes in addition to *C. flavescens*, *C. napiforme* Rudow, 1869, parasitic upon *Buteo jamaicensis* (Gmelin)—Red-tailed Hawk:

1. Occipital setae all long.
2. Margin of prothorax with 5 long and 3 short setae each side.
3. Tergocentral setae with minute to short setae among much longer ones.
4. Abdominal segments of female essentially of same length.
5. Females lack anterior setae on abdominal tergites.
6. Anus of female oval, lacking inner setae (occasionally 1-2 dorsal inner setae set very close to dorsal fringe; no dorsal indentation).
8. Male abdominal tergite IX without anterior setae.

Material examined: **Aquila chrysaetos** (Linnaeus)

- Goffstown, N. H. Oct. 23, 1961 Lacassade

Material examined: **Haliaeetus leucocephalus** (Linnaeus)

- Newmarket, N. H. Oct. 6, 1894 F. B. Webster (USNM Slide)
- Waltham, Mass. Nov. 12, 1921 R. H. Howe (USNM Slide)
- Swan Island, (Maine)? Dec. 22, 1946 M. C. Meyer (USNM Slide)
- Bar Harbor, Maine Aug. 7, 1933 A. E. B.
- No Locality No Date U. N. H. Coll.
Specimens of *Colpocephalum flavescens* were seen from the Newmarket, Swan Island, and Bar Harbor collections.

Measurements:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.36 .37</td>
</tr>
<tr>
<td>Head Width</td>
<td>.61 .64</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.40 .39</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.54 .54</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.99 2.19</td>
</tr>
</tbody>
</table>

*Colpocephalum nanum* Piaget, 1890

Colpocephalum nanum Piaget, 1890. Tijdschr. Ent., 33: 257, pl. 10, fig. 10.

Type host: Unknown.

New England hosts:
- *Buteo lineatus* (Gmelin)—Red-shouldered Hawk.
- *Buteo jamaicensis* (Gmelin)—Red-tailed Hawk.
- *Buteo lagopus* (Pontoppidan)—Rough-legged Hawk.
- *Accipiter gentilis* (Linnaeus)—Goshawk.
- *Accipiter cooperii* (Bonaparte)—Cooper's Hawk.

Price and Beer (1963a) include this species in their osborni-group with 5 other species none of which are found in New England. Thus the following characteristics will serve for determining *C. nanum*:

1. Mid-dorsal head setae long.
2. Occipital setae all long.
3. Margin of prothorax with 5 long and 3 short setae on each side.
4. Abdominal tergites III-IX of ♀ usually showing faint division into 2 or 3 parts.
5. Anus of female usually indented dorsally, always with ventral and usually with dorsal inner setae.
6. Vulva flattened, with prominent lateral row of hooked spines.
7. Male genitalia without lateral posterior projections on the genital sclerite; penis barbed.

Material examined: *Buteo lineatus* (Gmelin)

Concord, N. H. Sept. 1, 1964 J. E. K.

No *Colpocephalum nanum* specimens were found.
Material examined: *Buteo jamaicensis* (Gmelin)

None.

Material examined: *Buteo lagopus* (Pontoppidan)

None.

Material examined: Slides.


The M. C. Z. material contained specimens with the label *Colpocephalum flavescens*. The determination was by Peters and these could be *C. nanum* Piaget, 1890.

Material examined: *Accipiter gentilis* (Linnaeus)

Martha's Vineyard, Mass. Nov. ?, 1927 USNM Slide
No Locality No Date U. N. H. Coll.
Stratton, Maine Sept. 9, 1965 H. Tyler

*Colpocephalum nanum* was collected from the 1927 Martha's Vineyard material now at the USNM, and I collected 2 ♀ *C. nanum* from the confiscated bird at Plum Island and 7 ♀ and 6 ♂ from the bird caught at Stratton, Maine.

Material examined: *Accipiter cooperii* (Bonaparte)

No Locality No Date U. N. H. Coll.

No *C. nanum* were found on either of these birds.
Colpocephalum turbinatum Denny, 1842


Colpocephalum subflavescens Piaget, 1880. Les Pediculines: 571, pl. 48, fig. 2.

Colpocephalum dissimile major Piaget, 1885 (nec 1880). Les Pediculines, Supplement: 119, pl. 13, fig. 2.


Colpocephalum latifasciatum Piaget, 1885. Les Pediculines, Supplement: 130, pl. 14, fig. 2.


Type host: Domestic pigeon.

Other New England hosts:

Haliaeetus leucocephalus (Linnaeus)—Bald Eagle
Circus cyaneus (Linnaeus)—Marsh Hawk.
Buteo jamaicensis (Gmelin)—Red-tailed Hawk.

This is the only species of Colpocephalum placed in the turbinatum-group by Price and Beer (1963a) that is found on New England Falcons. The characteristics of this group are:

1. Mid-dorsal head setae long.
2. All occipital setae long.
3. Margin of prothorax with 5 long and 3 short setae on each side.
4. Female with abdominal tergite II longer than tergite III and with group of long median tergocentral setae.
5. Female with tergites III-IX tripartite.
6. Anus of ♀ indented dorsally, with dorsal and ventral inner setae.
7. Vulva flattened, with pronounced lateral row of hooked setae.
8. Male genitalia with a pair of pointed latero-posterior projections on the genital sclerite; penis barbed.

Material examined: *Haliaeetus leucocephalus* (Linnaeus)

Data the same as for *C. flavescens* (deHaan) (Pg. 58). No *Colpocephalum turbinatum* were found.

Material examined: *Circus cyaneus* (Linnaeus)


No Locality No Date U. N. H. Coll.

Two females and one male were taken from the Marsh Hawk in the University of New Hampshire bird skin collection. The Newmarket, New Hampshire, collection is a record of Mallophaga taken from *Circus cyaneus*. The validity of the record is questionable since all the material is lost.

Material examined: *Buteo jamaicensis* (Gemlin)

Collection data is the same as appeared under *Colpocephalum nanum* Piaget, 1890 (Pg. 59). No specimens of *C. turbinatum* Denny, 1842, were found.

The collections of domestic pigeons, the type host for this species of Mallophaga, are too numerous to mention. In all of these collections no specimens of *Colpocephalum turbinatum* have been found.

*Colpocephalum zerafae* Ansari, 1955


*Colpocephalum falconii caerulescens* Carriker, 1963. Mem. Soc. Cien. Nat. LaSalle, 23: 11, pl. 1b, fig. 4b; pl. 4, fig. 4.

*Colpocephalum falconii rufigularis* Carriker, 1963. Mem. Soc. Cien. Nat. LaSalle, 23: 11, pl. 1b, fig. 2; pl. 2, fig. 2a; pl. 4, fig. 3b.
Type host: *Falco jugger* J. E. Gray
New England hosts:
*Falco sparverius* Linnaeus—Sparrow Hawk.
*Falco columbarius* Linnaeus—Pigeon Hawk.

This is the only species in the *zerafae*-group erected by Price and Beer (1963a) found in New England.

1. Mid-dorsal head setae minute.
2. Occipital setae long.
3. Margin of prothorax with 5 long and 3 short setae each side.
4. Female with abdominal tergites all essentially same length and un-divided.
5. Anus of female slightly indented dorsally, usually with both dorsal and ventral inner setae.
6. Vulva broadly rounded, with weak row of lateral hooked setae.
7. Male genitalia without latero-posterior projections on genital sclerite; penis without barbs and tapered at tip.

Material examined: *Falco sparverius* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

None of the above specimens yielded *Colpocephalum zerafae* Ansari, 1955.

Material examined: *Falco columbarius* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

No specimens of *C. zerafae* Ansari, 1955, were found.
CUCULIPHILUS

Type species: Pediculus fasciatus Scopoli, 1763.

Type species: Menopon alternatum Osborn, 1902

Type species: Aegypophilus gypsis Eichler, 1944.


Laterodorsal margin of head with deep, narrow, preocular slit.
Terminal segments of antennae with definite indication of division into two. Prosternum with two median setae. Combs of stout setae present on venter of posterior femur. Lateral margins of tergites with or without internal sclerotic buttresses. Two or more combs of setae present on each side of median line on abdominal sternites III-IV of female and abdominal sternites III-V of male.
At the present time, there are no described species of this genus recognized as being on New England birds.

*Cuculiphilus decoratum* (Kellogg, 1896)


Type host: Unknown.

The host record given by Kellogg, *Elanus leucurus*, is an error. Emerson (1949a) changed the host record to *Coccyzus americanus occidentalis* Ridgway. Scharf and Price (1965) after studying specimens of *Cuculiphilus* from *Coccyzus americanus americanus* consider that the members of the genus *Cuculiphilus* collected from the yellow-billed Cuckoo, *Coccyzus americanus* (Linnaeus) are not *Cuculiphilus decoratum* (Kellogg, 1896).

I have collected two immature male *Cuculiphilus* sp. from a Yellow-billed Cuckoo in Durham, New Hampshire, June 1, 1964. This undescribed species is the only member of the genus known to occur on New England birds, although it is likely that with sufficient collecting a species will be found on the Black-billed Cuckoo, *Coccyzus erythropthalmus* (Wilson).

*Cuculiphilus alternatus* (Osborn, 1902)

*Menopon alternatum* Osborn, 1902. Ohio Nat., 2: 175, pl. 2, fig. 1.


Type host: *Cathartes aura* (Linnaeus)—Turkey Vulture.

Other North American host:

*Coragyps atratus* (Bechstein)—Black Vulture.

Although these two birds at present are rare in New England, they are mentioned because I have examined a collection of 14 females and 7 males from *Coragyps atratus*, Lincoln, Maine, June 17, 1938 (fig. 8).
**Dennyus**


_Type species:_ *Nitzschia burmeisteri* Denny, 1842. (A synonym of *Pediculis hirundinis* Linnaeus, 1761.


_Type species:_ _Takamatsuia major_ Uchida, 1926.


_Type species:_ _Dennyus (Ctenodennyus) spiniger_ Ewing, 1930.

Shape of head characteristic; lateral margins continuous with eyes and slightly swollen above the base of the antennae. Temporal lobes somewhat expanded and quadrangular. Antennal fossae partly roofed over dorsally by expansion of the integument. Eye double, the two corneas appearing to be partially fused; occiput slightly concave. Prothorax rather narrow but pronotum expanded laterally into a pair of spine-bearing lobes; prosternal plate well developed with heavily sclerotized borders. Mesothorax small but usually distinct and separated from metathorax by a dorsal suture. First pair of legs short; other legs long. Femur I very short, frequently as broad as long; posterior femur very long with a patch of ventral setae. Abdomen long and quite narrow; pleurites typically with a marginal row of spines and a small tuft of long, hair-like setae. Abdominal tergites bare except for a posterior marginal row of setae. Some abdominal sternites with patches of setae about the size of those clothing the body. Genitalia of male symmetrical with long, narrow, basal plate. Parameres free, clasper-like and not united. Penis undeveloped. Genital region of female with sternites VIII and IX fused into a single large plate; lateral margin of vulva smoothly convex with corona of fine setae.
This genus has been reviewed by Carriker (1954a) and Emerson and Pratt (1956).

**Dennyus dubius** (Kellogg, 1896)


Type host: *Chaetura pelagica* (Linnaeus)—Chimney Swift.

Kellogg (1896) described this species from specimens collected in Kansas. It has also been reported from Massachusetts, Maryland, New York, Ohio, Pennsylvania, South Carolina, and Virginia by Peters (1936); from North Carolina by Brimley (1938); from Quebec by Whitehead (1954) and Emerson and Pratt (1956) have seen specimens of this species from Georgia, Illinois, Indiana, Maryland, Massachusetts, Mississippi, Missouri, Nebraska, New Jersey, New York, North Dakota, Oregon, Pennsylvania, South Carolina, Tennessee, and Virginia.

Material examined: *Chaetura pelagica* (Linnaeus)

- Dover, N. H. Aug. 9, 1964 J. E. K.
- Durham, N. H. Aug. 9, 1964 A. C. Borror

**D. dubius** was collected from the Chimney Swift at Durham, New Hampshire.

Material examined: Slides.

- Durham, N. H. Aug. 2, 1921 P. R. Lowry
- North Eastham, Mass. Aug. 1, 1929 O. L. Austin (2 USNM Slides)
- Newcastle, Maine Aug. 23, 1948 S. C. Raven

This is the only species of the genus found in New England; therefore, the description of the genus and fig. 9. are sufficient to determine this species.
<table>
<thead>
<tr>
<th>Measurements</th>
<th>2 Males</th>
<th>2 Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.43</td>
<td>.45</td>
</tr>
<tr>
<td>Head Width</td>
<td>.69</td>
<td>.70</td>
</tr>
<tr>
<td>Prothorax</td>
<td>.42</td>
<td>.42</td>
</tr>
<tr>
<td>Metathorax Width</td>
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<td>.67</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.26</td>
<td>2.34</td>
</tr>
<tr>
<td></td>
<td>2.85</td>
<td>2.93</td>
</tr>
</tbody>
</table>
EIDMANIELLA

Type species: Menopon brevipalpe Piaget, 1880.

Head about twice as broad as long; laterodorsal margin of forehead
with a narrow preocular slit. Pouch-like cavity between laterodorsal
and lateroventral margins of preantennal region roofed over distally by
a fusion of these margins. Mandibles situated a short distance behind
the anterior margin. Thorax normal; mesonotum short and separated from
the metanotum. Prosternal plate with a median pointed process; pro­
sternum with two median setae. Third femora with a brush of normal
setae on the ventral surface. Second and third tibiae with three spine­
like setae at their apices. Abdomen elongately oval with tergal,
sternal, and paratergal plates. Abdominal sternites IV-VI with brushes
of normal setae, those on VI may be scattered. Male genitalia with
short basal plate, narrowed anteriorly and gradually broadening toward
the apex where it is strongly expanded; parameres present.
Eidmaniella brevipalpis (Piaget, 1880)

Menopon brevipalpe Piaget, 1880. Les Pediculines: 498, pl. 40, fig. 5.


Type host: Phalacrocorax carbo (Linnaeus)—Great Cormorant.

I have no collections of this bird nor any data or records of this species of Mallophaga.

Eidmaniella pustulosa (Nitzsch, 1866)


Type host: Morus bassanus (Linnaeus)—Gannet.

The only record I have found of this species in North America is by Whitehead (1954) from Quebec. I have been unable to collect any Gannets during the course of this study. However, I have made several collections of the Double-crested Cormorant, Phalacrocorax auritus (Lesson), and have taken numerous specimens of Eidmaniella sp. from these birds. This is an undescribed species of mallophagan which I am now in the process of determining. (fig. 10)
EUREUM


Distinguishable by its large, short, robust form. Head broader than long, forehead broadly curved, temporal lobes greatly expanded and angular, occiput deeply concave. Antennae small, the fossae partly covered by the lateral expansions of the head. There is no preocular notch or slit. Eye double, the two corneas partly fused. Prothorax enlarged, emarginate laterally and posteriorly. Prosternal plate well developed with heavily sclerotized lateral margins and bearing numerous hair-like setae. Mesothorax short, greatly reduced and separated from metathorax by a distinct dorsal suture often times not visible in mounted specimens. Metathorax large, lateral margins expanded posteriorly. First pair of legs short; second and third pairs longer. Femur I very short; posterior femur with a patch of fine setae ventrally. Abdomen broad and short, paratergal plates with a marginal row of spines and setae and a small tuft of long hair-like setae. Tergites bare except for a single transverse row of closely set setae. Sternites V, VI, and VII with a patch of fine setae at each posterolateral angle. Male genitalis symmetrical with short, wide basal plate. Parameres short, clasper-like and free, extending posteriorly beyond preputial sac. Female genital region with sternites VIII and IX fused into a single, short plate; margin of vulva convex with a corona of fine setae.
Mallophaga of the genus Eureum are ectoparasitic on members of the family Apodidae (Swifts) of the order Apodiformes. This genus contains about seven species, one of which is known to occur on a host found in New England. (fig. 11).
Eureum ewingi Eichler, 1942c

"Eureum cimicoides Nitzsch" Ewing, 1930 (nec Burmeister, 1838).
Proc. U. S. Nat. Mus., No. 2843, 77: 10, figs. 5 and 7e.
"Eureum cimicoides Nitzsch" Ewing, 1930).
Type host: Chaetura pelagica (Linnaeus)--Chimney Swift.

I have examined seven Chimney Swifts: Durham, New Hampshire (2); North Eastham, Massachusetts; Dover, New Hampshire; Liberty Hill, Connecticut; Mt. Jefferson?, Massachusetts; and Newcastle, Maine. No Eureum ewingi Eichler, 1942, were collected.
Type species: Monopon latum Piaget, 1880.

Type species: Columbimenopon modestum Ansari, 1951.

Medium-sized Menoponidae with general characters of head as in Menacanthus Neumann, 1912. Head wider than long, laterodorsal margin with deep, narrow preocular slit. Temporal lobes broadly rounded. Ventral surface of head with a pair of sclerotized, posteriorly projecting short processes, deeply colored in adult specimens and with inwardly-curved tips. Distal anterior angle of second segment of antennae greatly prolonged and rounded. Pro- and pterothorax of normal size and appearance. Legs large, especially posterior pair. Abdomen elongate-oval. Some abdominal pleurites in both sexes prolonged posteriorly. Posterior femur and abdominal sternites IV-V or III-VI with scattered or thick brushes of stout setae.
Hohorstiella lata (Piaget, 1880)

Menopon latum Piaget, 1880. Les Pediculines: 457, pl. 37, fig. 1.
Type host: Domestic Pigeon.

This is the only known species of the genus found in New England. The only other possible host for this genus in this area is Zenaidura macroura (Linnaeus)—the Mourning Dove, however, the genus Hohorstiella has never been reported from it. The description of the genus and fig. 12. will serve to place this Mallophaga to species.

I have examined eighteen domestic pigeons from various New England localities with negative results. Two females and one male Hohorstiella lata (Piaget, 1880) from Portland, Maine, Feb. 10, 1958, R. L. Blickle, collector, are at hand.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Male</th>
<th>2 Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.36</td>
<td>.31 .39</td>
</tr>
<tr>
<td>Head Width</td>
<td>.60</td>
<td>.63 .69</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.40</td>
<td>.48 .49</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.60</td>
<td>.65 .79</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.76</td>
<td>1.14 1.27</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.84</td>
<td>.79 1.20</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.63</td>
<td>1.98 2.31</td>
</tr>
</tbody>
</table>
Type species: Menopon albofasciatum Piaget, 1880.

Laterodorsal margin of head with preocular notch or slit. Pouch-like cavity, usually deep, between laterodorsal and lateroventral margins of head. Occiput with basal thickening passing forward to laterodorsal margins of head. Prosternum with two median setae; prosternal plate with deeply serrated posterior margin (fig. 13b). Posterior femur and abdominal sternites IV-V with scattered to moderately thick brushes of normal setae; sternites III and V also possess brushes of scattered setae (fig. 13a).
Holomenopon clypeilargum Eichler, 1943

Type host: Anas acuta Linnaeus—Pintail

I have no information concerning this species of Mallophaga and no records of it being collected in New England. It is included, since it should be found if enough collections are made.

Holomenopon leucoxanthum (Burmeister, 1838)

Type host: Anas creca Linnaeus—Common Teal.

The Common Teal is a casual visitor to New England. I have not collected it to date and have no records of Holomenopon leucoxanthum having been recovered from it in this area.

Holomenopon loomisii (Kellogg, 1896)

Type host: Melanitta deglandi (Bonaparte)—White-winged Scoter.

Kellogg (1896) describes this species as follows:

Head semilunar with evenly rounded front, shallow ocular emarginations, and rounded posterior angles; occipital margin concave; a small, black, ocular fleck, dark brown ocular blotch. Prothorax with produced lateral angles obtuse, bearing two spines and a long hair. Metathorax with divergent sides, not quite as wide as head, with flatly convex posterior margin bearing a series of long hairs. Abdomen ovate, with broad transverse bands across all segments separated by wide uncolored sutures.

Material examined: Melanitta deglandi (Bonaparte)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton, N. H.</td>
<td>Oct. 5, 1964</td>
<td>B. Barrett (4 birds)</td>
</tr>
<tr>
<td>Hampton, N. H.</td>
<td>Oct. 9, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Hampton, N. H.</td>
<td>Nov. 2, 1965</td>
<td>B. Barrett (2 birds)</td>
</tr>
<tr>
<td>Hampton, N. H.</td>
<td>Nov. 23, 1965</td>
<td>D. Brannigan</td>
</tr>
</tbody>
</table>
One of the two birds collected on November 2, 1965 yielded three female and one male *Holomenopon loomisii* (Kellogg).

**Measurements:**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Female (Kellogg Type)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.27</td>
<td>.28</td>
<td>.30</td>
</tr>
<tr>
<td>Head Width</td>
<td>.52</td>
<td>.54</td>
<td>.56</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.42</td>
<td>.43</td>
<td></td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.46</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.79</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.64</td>
<td>.76</td>
<td>.84</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.51</td>
<td>1.74</td>
<td>1.80</td>
</tr>
</tbody>
</table>

*Holomenopon lunarium* (Rudow, 1869)


Type host: *Oidemia nigra* (Linnaeus)—Common Scoter.

Material examined: *Oidemia nigra* (Linnaeus)

Hampton, N. H. Nov. 20, 1963 Coll. ?
Hampton, N. H. Oct. 27, 1965 B. Barrett

I have not seen the original description of this species. However, I have collected one male and two female *Holomenopon* from *Oidema nigra* (Linnaeus), Hampton, New Hampshire, November 20, 1963, which are probably referable to this species.

**Measurements:**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>2 Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.27</td>
<td>.27</td>
</tr>
<tr>
<td>Head Width</td>
<td>.45</td>
<td>.54</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.34</td>
<td>.43</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.46</td>
<td>.54</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.88</td>
<td>1.26</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.69</td>
<td>.84</td>
</tr>
</tbody>
</table>
| Total Length         | 1.48 | 1.93      | 1.87
Holomenopon transvaalense (Bedford, 1920)


Type host: Domestic duck.

Emerson (1964) states that the type host of this species could be Anas platyrhynchos Linnaeus or Cairina moschata (Linnaeus), but believes it to be Anas platyrhynchos—Mallard.

Material examined: Anas platyrhynchos Linnaeus

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Nov. 11, 1965</td>
<td>Coll. ?</td>
</tr>
</tbody>
</table>

All of the above birds were free of this species of Holomenopon.

All members of the Anseriformes are potential hosts for the genus Holomenopon. I have found in the collections that I have made that Aix sponsa (Linnaeus)—Wood Duck seems to be the most common host in this area. I have collected 17 males and 10 females from this host. The USNM has a slide of Holomenopon collected from a Wood Duck at Winchester, New Hampshire, September 22, 1934, by L. R. Nelson and the Cornell collection contains a specimen from Lenox, Massachusetts.
KURODAIA

Type species: Colpocephalum haliaetis Denny, 1842.

Type species: Menopon fulvofasciatum Piaget, 1880.

Type species: Colpocephalum painei McGregor, 1912.

Type species: Cuculiphilus (Ululoecus) panjabensis Ansari, 1951.

Laterodorsal margins of head with deep, broad or narrow preocular slit. Preantennal region laterally sinuate, swollen above bases of antennae. Temporal lobes broadly rounded. Prothorax winged anteriorly; mesothorax narrow and separated from metathorax by dorsal suture. Legs stout; ventral surface of posterior femur with three or four combs of stout setae. Abdomen robust, elongate-oval, with greatest width at segment IV. Sternite III with two or more combs of one to six setae laterally. Male genitalia large and complex. Female genital region with a row of setae on posterior margin of vulva.
Kurodaia acadicae Price and Beer, 1963b
Type host: Aegolius acadicus (Gmelin)—Saw-whet Owl.

Price and Beer (1963b) give the following characteristics for this species: Distinctly different from all other Kurodaia in its head chaetotaxy. Both lateral head setae, near preocular angle, of equal length; 3 very long lateral, temporal setae, the anterior one being shorter than the other two; dorsal seta usually near setae complex. Six to seven metasternal setae; vulva with 16-22 marginal setae and 14-19 anterior setae. Postvulval plates each with 3-5 setae. Sternite III with 2 comb rows, the first being very weak, with one 2-4 setae.

Material examined: Aegolius acadicus (Gmelin)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Nov. 23, 1965</td>
<td>A. H. Borrer</td>
</tr>
</tbody>
</table>

| (3 birds) |

No specimens of Kurodaia acadicae Price and Beer were found.

Kurodaia flammei Price and Beer, 1963b
Type host: Asio flammeus (Pontoppidan)—Short-eared Owl.

Marginal prothoracic seta long, attaining half the length of the adjacent setae. Inner posterior setae on abdominal tergite IX usually of 3 or 4 medium setae, less often 2; all other Kurodaia from New England typically have only 2 setae in this position. Plates posterior to the vulva with 4-5 setae on each. Metasternum with 5-6 setae.

Material examined: Asio flammeus (Pontoppidan)

None.
**Kurodaia fulvofasciata** (Piaget, 1880)

*Menopon fulvofasciatum* Piaget, 1880. Les Pediculines: 429, pl. 11, fig. 9.


**Type host:** *Buteo buteo* (Linnaeus)

New England hosts:

*Buteo jamaicensis* (Gmelin)—Red-tailed Hawk.

*Buteo lagopus* (Pontoppidan)—Rough-legged Hawk.

*Buteo lineatus* (Gmelin)—Red-shouldered Hawk.

*Buteo platypterus* (Vieillot)—Broad-winged Hawk.

*Circus cygnus* (Linnaeus)—Marsh Hawk.

*Haiaeetus leucocephalus* (Linnaeus)—Bald Eagle.

Material examined: **Buteo jamaicensis** (Gmelin)

None.

Material examined: **Buteo lagopus** (Pontoppidan)

None.

Material examined: **Buteo lineatus** (Gmelin)

Concord, N. H. Sept. 1, 1964 J. E. K.

*K. fulvofasciata* was not found.

Material examined: **Buteo platypterus** (Vieillot)

No Locality No Date U. N. H. Coll.

*K. fulvofasciata* was not found.

Material examined: **Circus cygnus** (Linnaeus)

No Locality No Date U. N. H. Coll.

*K. fulvofasciata* was not found.

Material examined: **Haiaeetus leucocephalus** (Linnaeus)

No Locality No Date U. N. H. Coll.

*K. fulvofasciata* was not found.
After examining quite a large number of hawks I must agree with Price and Beer (1963c) that aside from *Kurodaia haliaeeti*, lice of this genus are not very common on hawks.

*Kurodaia haliaeeti* (Denny, 1842)


*Colpocephalum pachygaster* Giebel, 1874. Insecta Epizoae: 264.

Type host: *Pandion halaeetus* (Linnaeus)—Osprey.

*Kurodaia haliaeeti* is known only from the Osprey but it is by far the most common member of the genus to be found on the Falconiformes. The only Osprey I have examined was a study bird skin in the University of New Hampshire Collection. It contained one male and one female *Kurodaia haliaeeti* (Denny, 1842).

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.30</td>
<td>.31</td>
</tr>
<tr>
<td>Head Width</td>
<td>.58</td>
<td>.63</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.42</td>
<td>.45</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.52</td>
<td>.58</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.85</td>
<td>1.11</td>
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<tr>
<td>Abdomen Width</td>
<td>.70</td>
<td>.87</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.53</td>
<td>1.86</td>
</tr>
</tbody>
</table>

*Kurodaia magna* Emerson, 1960a


Type host: *Strix varia* Barton—Barred Owl.

Other New England host: *Bubo virginianus* (Gmelin)—Great Horned Owl.
Peters (1936) reports this on *Bubo virginianus* from Maine, Michigan, North Carolina, New York, South Carolina, and on *Strix varia* from South Carolina. Brimley (1938) reports it on *Bubo virginianus* from North Carolina.

Material examined: *Strix varia* Barton

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>N. H. Fish &amp; Game Dept.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwood, N. H.</td>
<td>Oct. 11, 1965</td>
<td>A. H. Mason</td>
</tr>
<tr>
<td>York, Maine</td>
<td>Jan. 6-7, 1966</td>
<td>Mr. Law</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Feb. 21, 1966</td>
<td>G. Byers</td>
</tr>
</tbody>
</table>

The Northwood collection yielded 4 male and 5 female *K. magna*. (fig. 14).

Material examined: Slides

Schoodic Pt. Acadia Nat. Park, Maine Nov. 21, 1935 A. E. B.

Material examined: *Bubo virginianus* (Gmelin)

None.

Material examined: Slides

Lincoln, Maine Jan.-June, 1941 Coll. ?

This collection contained 5 male and 19 female *K. magna*.

*Kurodia painei* (McGregor, 1912)


Type host: *Otus asio* (Linnaeus)—Screech Owl.

McGregor (1912) described this species from several specimens collected in Dallas, Texas. It has been reported, Peters (1936) from Washington, D. C., and Judd (1953) from Ontario.
Measurements of Type Male:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.39</td>
</tr>
<tr>
<td>Head Width</td>
<td>.53</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.75</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.57</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.30</td>
</tr>
</tbody>
</table>

Material examined: *Otus asio* (Linnaeus)

No Locality           | No Date | U. N. H. Coll. |
-----------------------|---------|----------------|

No specimens of *Kurodaia painei* (McGregor) were found.
MACHAERILAEMUS

Type species: Machaerilaemus latifrons Harrison, 1915.

Type species: Hirundoecus americanus Ewing, 1930.

Menoponidae with head more than twice as broad as long and without a preocular notch or slit; temporal lobes reduced, rounded; gular plate large, squarish with or without a central perforation and lateral processes. Prosternal plate well developed with more than two median setae; third femora and all of the abdominal sternites without combs of setae but one or more spine-like setae may be present laterally on abdominal sternites.
Machaerilaemus americanus (Ewing, 1930)

Type host: Progne subis (Linnaeus)—Purple Martin.

Described from a single female collected from the type host in New Mexico, May 25, 1927, by H. H. Kimball. This one specimen, as far as is known, is the only known collection ever to be made of this species. The fact that the genus Machaerilaemus is quite rare and that the Purple Martin is an uncommon bird in New England makes it highly unlikely that this species will ever be collected here.

Machaerilaemus complexus Malcomson, 1937

Type host: Spizella pusilla (Wilson)—Field Sparrow.

This species is separated from the remaining members of the genus by the presence of a circular opening in the center of the gular plate and by the absence of a caudally pointing process on the same plate.

Described from four females and two males collected from the type host in Pennsylvania. This is the only known collection of this species. I have seen only one Field Sparrow collection, Cambridge, Massachusetts.

Machaerilaemus maestus (Kellogg and Chapman, 1899)

Type host: Zonotrichia atricapilla (Gmelin)—Golden-crowned Sparrow.

M. maestus has a gular plate without an opening and with more than four setae on each of its lateral margins and a metasternal plate with a short seta at each posterolateral angle. (fig. 15).

In addition to the type host, Emerson (1947) reports this species
from *Pipilo erythrophthalmus* (Gmelin)—Rufous-sided Towhee, in Ohio, New Hampshire, New York, and South Carolina; from *Junco oreganus* (Townsend)—Oregon Junco, in Oregon; from *Pooectes gramineus* (Gmelin)—Vesper Sparrow, in Michigan; from *Junco hyemalis* (Linn.)—Slate-colored Junco, in New Hampshire; from *Zonotrichia albicollis* (Gmelin)—White-throated Sparrow, in South Carolina; and from *Melospiza melodia* (Wilson) --Song Sparrow, in New Hampshire. Since that time *Machaerilaemus melospizae* Emerson, 1954, has been described which may now include some of the above records.

Material examined: *Pipilo erythrophthalmus* (Gmelin).

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epping, N. H.</td>
<td>June 4, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Keene, N. H.</td>
<td>Aug. 21, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Rochester, N. H.</td>
<td>May 30, 1965</td>
<td>B. Smith</td>
</tr>
</tbody>
</table>

*M. maestus* was not found.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 28, 1948</td>
<td>E. O. Hooghkirk</td>
</tr>
</tbody>
</table>

Material examined: *Junco hyemalis* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Nov. 17, 1965</td>
<td>D. Adams</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Nov. 28, 1965</td>
<td>P. Sawyer</td>
</tr>
</tbody>
</table>

*M. maestus* was not found.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westmoreland, N. H.</td>
<td>Apr. 13, 1933</td>
<td>L. O. Shelley (USNM Slide)</td>
</tr>
</tbody>
</table>

Material examined: *Pooectes gramineus* (Gmelin).

None.
Material examined: **Junco oreganus** (Townsend)

None.

Material examined: **Zonotrichia albicollis** (Gmelin)

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandwich, N. H.</td>
<td>May 6, 1964</td>
<td>J. E. K. (2 birds)</td>
</tr>
<tr>
<td>Farmington, N. H.</td>
<td>May 8, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Haverhill, Mass.</td>
<td>Apr. 23, 1965</td>
<td>N. Bailey</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>May 4, 1965</td>
<td>J. E. K. (5 birds)</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>May 10, 1965</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>

**M. maestus** was not found.

For material from the Song Sparrow see under **Machaerilaemus melospizae** Emerson, 1954.

I have collected a single female **M. maestus** from the Blue Jay, **Cyanocitta cristata** (Linnaeus), Durham, New Hampshire, August 2, 1964. This appears to be a new host record for this species of Mallophaga.

**Machaerilaemus malleus** (Burmeister, 1838)


Type host: **Hirundo rustica** Linnaeus—Barn Swallow.

Kellogg and Chapman (1899) reported this species from a Cliff Swallow in California and Paine (1914) has collected a single female from the same location and host. These are the only published records of this mallophagan species in the United State.

Material examined: **Hirundo rustica** Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albany, N. H.</td>
<td>May 15, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>June 4, 1965</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Portsmouth, N. H.</td>
<td>June 23, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

None of the above collections contained any specimens of **Machaerilaemus malleus** (Burmeister, 1838). However, the Barn Swallow is a very common bird in New England and sufficient collecting will
probably reveal this louse.

Machaerilaemus melospizae Emerson, 1954
Machaerilaemus melospizae Emerson, 1954. J. Kansas Ent. Soc., 27: 45, fig. 1.
Type host: Melospiza melodia (Wilson)—Song Sparrow.

This species is similar to M. maestus (Kellogg and Chapman, 1899) but can be separated from it by the fact that M. melospizae has a metasternal plate with a long seta at each postero-lateral angle.

Material examined: Melospiza melodia (Wilson)

I have examined 27 Song Sparrows from Maine, Vermont, New Hampshire, and Massachusetts. Although this species of bird often carries Mallophaga, I have been unable to find M. melospizae. The USNM collection contains a slide of this species collected at Westmoreland, New Hampshire, by L. O. Shelly, April 13, 1933. This appears to be the only collection of this species in New England.
MENACANTHUS

 Type species: Menopon robustum Kellogg, 1896.

 Type species: Neumannia okadai Uchida, 1926.

 Type species: Menopon biseriatum Piaget, 1880. (A synonym of Menopon stramineum Nitzsch, 1818).


 Type species: Zemiodes zumpti Eichler, 1944a. (A synonym of Menopon stramineum Nitzsch, 1818).

Species referable to this genus are similar in size, shape and appearance to those of the genus Menopon Nitzsch, 1818. In Menacanthus the anteroventral surface of the head bears a pair of large, spine-like processes directed backward and downward. Posterior femur with or without patches of setae on the ventral surface. Abdomen elongate-oval, that of female wider and more robust than that of male. Abdominal sternites either with brushes or marginal spine-like setae at posteroventral angles prolonged posteriorly. Male genitalia with large basal plate; parameres free with tips turned outward apically. Clay (1938) hesitated to give generic characters because the genus needs considerably more detailed study.
Menacanthus alaskensis (Kellogg and Chapman, 1902)

Type host: Pinicola enucleator (Linnaeus)— Pine Grosbeak.

Described from many specimens collected from Pinicola enucleator, Kadiak Island, Alaska.

Measurements of female:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.30</td>
</tr>
<tr>
<td>Head Width</td>
<td>.45</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.60</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.60</td>
</tr>
</tbody>
</table>

Material examined: Pinicola enucleator (Linnaeus)

Bar Harbor, Maine          Jan. 9, 1940    A. E. B. (slide)

The Bar Harbor, Maine, material yielded 18 female and 6 male Menacanthus alaskensis (Kellogg and Chapman). The other collections were free of this parasite.

Menacanthus aurocapillus Carriker, 1958

Type host: Seiurus aurocapillus (Linnaeus)—Ovenbird.

The types were collected at Fort Meade, Anne Arundel County, Maryland, July 21, 1955. Carriker (1958) states that this species is an unusual member of the genus Menacanthus, resembling in some ways, especially the shape of the head, the genus Machaerilaemus. The ventral head spines are poorly chitinized and are set at an unusual distance behind the bases of the mandibles.
Material examined: *Seiurus aurocapillus* (Linnaeus)

Durham, N. H. May 10, 1965 H. Tyler
Durham, N. H. Aug. 4, 1965 P. Sawyer


*Menacanthus annulatus* (Giebel, 1874)

Type host: *Passer domesticus* (Linnaeus)—House Sparrow.

The only report I have of this species is Judd (1953). In 45 collections from New Hampshire, Massachusetts, and Rhode Island, I have been unable to find this species of *Menacanthus*.

*Menacanthus camelinus* (Nitzsch, 1874)

*Menopon camelinum* Nitzsch, 1874. In *Giebel*, Insecta Epizoa: 286, pl. 15, fig. 3.
Type host: *Lanius excubitor* Linnaeus—Northern Shrike.

I have not seen the original description of this species but Ansari (1951) gives the following description: Female—Head broad slightly less than twice as broad as long; front rounded, two short hairs on each side of meson; lateral margins with a small and three long hairs; ocular slit distinct; temples swollen, occipital margin slightly concave; gular plate quadrate, each side with four long hairs, the posterior one being the longest. Prothorax large, lateral angles each with a spine and a long hair; lateral margin slightly convex, each bearing a spine and a long hair, posterior margin nearly straight, bearing three long hairs on each half. Mesothorax reduced; metathorax short, broader than prothorax, posterior angle with two spines; posterior margin almost straight, bearing five long hairs and a spine on each half. Abdomen broadly
elliptical, widest at segment IV-V. Male similar to female but smaller.

Material examined: _Lanius excubitor_ Linnaeus

None.

_Menacanthus chrysophaeus_ (Kellogg, 1896)


Type host: _Melospiza melodia_ (Wilson)—Song Sparrow.

Measurements of Kellogg's specimens:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.25</td>
<td>.28</td>
</tr>
<tr>
<td>Head Width</td>
<td>.40</td>
<td>.50</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.50</td>
<td>.70</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.09</td>
<td>1.35</td>
</tr>
</tbody>
</table>

This is the most common mallophagan collected from the Song Sparrow. It has been recovered in 11 of 27 collections of this bird.

Westmoreland, N. H. Apr. 4, 1931 L. O. Shelly (USNM Slide)

Peterboro, N. H. Apr. 10, 1933 C. L. Whittle (USNM Slide)

Cape Cod, Mass. No Date C. M. Herman 1 ? (Emerson Coll.)

Westmoreland, N. H. Apr. 1, 1935 L. O. Shelly 1 ? (USNM Slide)

Wells River, Vt. Apr. 10, 1937 W. F. Smith (USNM Slide)

Groton, Mass. Apr. 8, 1938 W. P. Wharton (USNM Slide)

Groton, Mass. Apr. 10, 1938 W. P. Wharton (USNM Slide)

Groton, Mass. Aug. 13, 1938 W. P. Wharton (USNM Slide)

Durham, N. H. Mar. 31, 1948 E. O. Hooghkirk 1 5 ?

Taunton, Mass. May 17, 1962 K. E. Hyland 1 ?

Weare, N. H. Apr. 13, 1964 J. E. K. 8 9 ?
Menacanthus colaptis (Durrant, 1908)

Menopon colaptis Durrant, 1908. Ohio Nat., 8: 355, fig. 1h.
Type host: *Colaptes auratus* (Linnaeus)—Yellow-shafted Flicker.

Described from 12 specimens collected at Columbus, Ohio. Peters (1936) reports this species from New Hampshire and Virginia, and Whitehead (1954) reports it from Quebec.

Measurements of Durrant's specimens:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.27</td>
<td>.27</td>
</tr>
<tr>
<td>Head Width</td>
<td>.59</td>
<td>.58</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.78</td>
<td>.74</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.54</td>
<td>1.82</td>
</tr>
</tbody>
</table>

Material examined: *Colaptes auratus* (Linnaeus)

Durham, N. H. May 7, 1964 J. E. K.
Dover, N. H. Sept. 16, 1964 J. E. K.
Dover, N. H. Sept. 18, 1964 J. E. K.
Bartlett, N. H. Sept. 25, 1964 J. E. K.

The Lee, New Hampshire, material yielded two male and one female *Menacanthus colaptis*. The Dover, New Hampshire, collection of September 18, 1964, yielded four male and one female of this species and the Bartlett, New Hampshire, collection yielded three male and eight female specimens. (fig. 16).

---

Menacanthus cornutus (Schommer, 1913)

Menopon cornutum Schommer, 1913. *Uber die Mallophagen*: 64 and 71, pl. 7, fig. 29.
Type host: Chicken.

Menacanthus pallidulus (Neumann, 1912)

Type host: Chicken.
These two species from the chicken are mentioned together because I have no data on either mallophagan. I did no active collecting of ectoparasites of domestic birds and have collected neither of these species. Both of these may have been taken on Old World Galliformes and are much less common on chickens than *Menacanthus stramineus* (Nitzsch, 1818). Emerson (1956) was the first to report *M. cornutus* from the United States.

*Menacanthus expansus* (Osborn, 1896)


Type host: *Dolichonyx oryzivorus* (Linnaeus)--Bobolink.

I have examined a single Bobolink, Durham, New Hampshire, May 18, 1964, which was free of this parasite. Osborn (1896) describes *Menacanthus expansus* as follows:

Abdomen very broad, ovate. Head with a sinuous margin and very deeply emarginate occiput; orbital sinus entirely covered; temporal lobes with two long bristles and two or three short hairs; prothorax nearly as broad as head and closely fitting into the occipital cavity, the lateral angles in contact with temporal lobes; posterior margin semicircular; metathorax short, rounded in front, with two bristles at the lateral angles; legs robust, femora very large, irregularly set with short hairs; abdomen nearly as broad as long, uniformly yellowish brown, margins of segments above with a closely set series of hairs which are longer at the lateral angles posteriorly, and the entire ventral surface irregularly set with short hairs arising from minute clear pustules.

Length, 1.31; head, 0.18; abdomen, 0.80

Width, head, 0.47; abdomen, 0.80.

*Menacanthus meniscus* (Piaget, 1880)

*Menopon meniscus* Piaget, 1880. Les Pediculines: 447, pl. 36, fig. 7.

Type host: *Calcarius lapponicus* (Linnaeus)--Lapland Longspur.

I have been unable to collect any Lapland Longspurs during the course of this study and have no information concerning this species of *Menacanthus*. 
Menacanthus mutabilis Blagoveshtschensky, 1940
Menacanthus mutabilis Blagoveshtschensky, 1940. Mag. Parasit., Leningr., 8: 31 and 78, fig. 5.

Type host: Sturnus vulgaris Linnaeus--Starling.

During the course of this study, I have made 61 collections of Sturnus vulgaris and have found one Amblyceran (Menacanthus mutabilis) and one Ischnoceran (Bruelia nebulosa) to commonly infest this bird. The Starling is the host also for Myrsidea cucullaris and Sturnidoces sturni, however, I have not been able to find either of these species. I have collected both Menacanthus mutabilis and Bruelia nebulosa off the same bird in 6 of 61 collections with Bruelia always being the more numerous.

Measurements: Menacanthus mutabilis, five males

<table>
<thead>
<tr>
<th></th>
<th>.48</th>
<th>.48</th>
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<th>.46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Width</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prothorax</td>
<td>.37</td>
<td>.37</td>
<td>.37</td>
<td>.37</td>
<td>.34</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.54</td>
<td>1.51</td>
<td>1.45</td>
<td>1.47</td>
<td>1.36</td>
</tr>
</tbody>
</table>

Measurements: Menacanthus mutabilis, five females

<table>
<thead>
<tr>
<th></th>
<th>.57</th>
<th>.55</th>
<th>.48</th>
<th>.57</th>
<th>.55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Width</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.43</td>
<td>.45</td>
<td>.37</td>
<td>.43</td>
<td>.43</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.90</td>
<td>1.80</td>
<td>1.41</td>
<td>1.92</td>
<td>2.07</td>
</tr>
</tbody>
</table>

Menacanthus perforatus (Piaget, 1880)

Type host: Eremophila alpestris (Linnaeus)--Horned Lark.

The Horned Lark is not a common bird in New England and I could find no published reports of this species being collected in the United States.
Menacanthus stramineus (Nitzsch, 1818)


Menopon biseriatum Piaget, 1880. Les Pediculines: 469, pl. 37, fig. 2.


Type host: Meleagris gallopavo Linnaeus—Turkey.

Other New England host:
Domestic Chicken.

This is the common "chicken body louse" which infests chickens, turkeys, and often times pheasants and Ruffed Grouse when they are raised in association with chickens.

As mentioned previously, I did not actively collect Mallophaga from chickens but the University of New Hampshire has several specimens of this species from the chicken.

Durham, N. H. Jan. 31, 1922 P. R. Lowry
Durham, N. H. Jan. 27, 1944 G. L. Walker
Durham, N. H. May 1, 1948 A. C. Corbett
Durham, N. H. Dec. 9, 1957 Coll. ?
Piermont, N. H. Jan. 8, 1964 Coll. ?

Emerson (1956a) uses the following key to differentiate the three species of Menacanthus parasitic upon chickens.

1. Abdominal tergites III-VII each with two transverse rows of setae--------------------------------------------------------------- 2
Abdominal tergites III-VII each with one transverse row of setae---------------------------------------------------------------Menacanthus pallidulus

2. More than 2 mm in length. Numerous short setae scattered on dorsum of meso-metathorax--------------------------Menacanthus stramineus
Less than 2 mm in length. Dorsum of meso-metathorax with a few short setae on the lateral margins----------Menacanthus cornutus

Menacanthus tenuifrons Blagoveschchtensky, 1940

Menacanthus tenuifrons Blagoveschhtensky, 1940. Mag. Parasit., Leningr., 8: 37, and 81, fig. 10.

Type host: Troglodytes troglodytes (Linnaeus)—Winter Wren.
Material examined: *Troglodytes troglodytes* (Linnaeus)


I have no information concerning this species of *Menacanthus* and the single collection above was free of all Mallophaga.
Type species: **Menopon gallinae** Linnaeus, 1758. (By subsequent designation by Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 327.

Head wider across rounded temporal lobes; laterodorsal margin with or without narrow preocular slit. Antennal fossae covered above by lateral expansions of margin of head. Forehead without ventral spine-like processes. Antennae short, first two segments truncated, conical; second segment rarely with a short appendage; third segment usually pediculated and goblet-shaped, receiving the spherical, ovoid or cylindrical fourth segment which is invariably the largest. Prothorax distinct, smaller than head; mesothorax fused with metathorax. Legs long, ventral surface of posterior femur and abdominal sternite IV with thick brushes of small setae. Sternite V may have indefinite brushes of three to six setae. Abdomen with internal pleural thickening. Individuals interested in this genus should consult the works of Ferris (1924), who revised the family Menoponidae, and Emerson (1954a), who reviewed the known species of the genus.

The only member of this genus found in New England is **Menopon gallinae** (Linnaeus), the "shaft louse" of chickens. Collections of this species are numerous and the species has been figured. (fig. 17).
MYRSIDEA

Type species: *Myrsidea victrix* Waterston, 1915a.

Type species: *Acolpocephalum brevipes* Ewing, 1927.

Type species: *Menopon cinerea* Thompson, 1939.

Type species: *Myrsidea struthidea* Thompson, 1939.

Type species: *Menopon robsoni* Cummings, 1914.

Type species: *Ramphasticola hirsuta* Carriker, 1949.

Type species: *Myrsidea (Alcediniphilus) kuluensis* Ansari, 1951.

Type species: *Menopon consimilis* Piaget, 1885.

Type species: *Menopon rustica* Giebel, 1874.

Type species: *Menopon cucullaris* Nitzsch, 1818. (nm for Redi's "Pollino del Storno bianco").


Type species: *Lanimenopon abborrens* Zlotorzycka, 1964.

Type species: *Eichlerinopon celeripes* Zlotorzycka, 1964.

Type species: *Neomyrsidella usitata* Zlotorzycka, 1964.

Head broader than long, forehead rounded, temporal lobes prominent with anterior margins set at nearly right angles to the longitudinal axis of the body. Gular and prosternal plates well developed. Thorax
distinctly three-segmented; metathorax frequently modified and produced posteriorly. Both sexes with a group of long, stout or spine-like setae on each posterolateral angle of enlarged abdominal sternite II. Posterior femur and abdominal sternites with or without brushes of setae ventrally. Male genitalia with basal plate moderately long, continuous distally with a broad, rounded lamina at base of which are affixed stout, apically incurved parameres. In size and outward appearance this genus is similar to Dennyus Neumann, 1906. Throughout the genus there is, according to Ferris (1916), an inherent tendency to vary.

This is one of the largest genera of the Menoponidae. It contains 87 described species, 14 of which have been reported from birds known to occur in New England. Members of this genus are ectoparasites of birds belonging to the order Passeriformes.
Myrsidea cucullaris (Nitzsch, 1818)


Type host: Sturnus vulgaris Linnaeus—Starling.

I have made 61 collections of starlings and have been unable to recover this species of Mallophaga. There is a figure of the female and a photograph of the male in Clay and Hopkins (1960).

Myrsidea incerta (Kellogg, 1896)


Myrsidea scabrei Ansari, 1956b. Pakistan J. Health 5: 167, figs. 4a-e.

Type host: Hylocichla ustulata (Nuttall)—Swainson's Thrush.

Kellogg described the type from a collection made in California. Other reports of this species, all from the Hermit Thrush, are Geist (1931) from Ohio; Stanford (1932) from Utah; Peters (1936) from Alabama, North Carolina, and New York; and Brimley (1938) from North Carolina.

Material examined: Hylocichla ustulata (Nuttall)

Bar Harbor, Maine June 1, 1938 A. E. B. (slide)

The collection from Bar Harbor contained 6 female, 1 male and 1 immature Myrsidea incerta (Kellogg, 1896).

Material examined: Spinus tristis (Linnaeus)

Cambridge, Mass. Apr. 29, 1915 G. K. Noble (M. C. Z. Coll.)
Durham, N. H. July 13, 1964 J. E. K.
The only specimens of *Myrsidea incerta* were found in the M. C. Z. material. All others were free of this species.

Measurements: 

<table>
<thead>
<tr>
<th></th>
<th>♀</th>
<th>♂ (Kellogg)</th>
<th>♀</th>
<th>♂ (Kellogg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.27</td>
<td>.31</td>
<td>.28</td>
<td>.43</td>
</tr>
<tr>
<td>Head Width</td>
<td>.39</td>
<td>.44</td>
<td>.43</td>
<td>.44</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.24</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.34</td>
<td>--</td>
<td>.42</td>
<td>--</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.42</td>
<td>.50</td>
<td>.58</td>
<td>.50</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.21</td>
<td>1.34</td>
<td>1.50</td>
<td>1.34</td>
</tr>
</tbody>
</table>

*Myrsidea interrupta* (Osborn, 1896)


Type host: *Corus brachyrhynchos* (Brehm)—Common Crow.

This species may be recognized by the female's having the metathorax produced and curving back over the dorsum of the abdomen whereas in the male the metathorax is straight. The abdominal blotches of the first three segments in the female are broken and interrupted, in the male they are complete. (fig. 18).

This species is common and has been reported from Iowa, Kansas, California, Ohio, Maryland, North Carolina, South Carolina, New York, and Washington, D. C.
Material examined: Corvus brachyrhynchos (Brehm).

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portsmouth, N. H.</td>
<td>July 2, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Wakefield, N. H.</td>
<td>Sept. 15, 1964</td>
<td>G. L. Walker (2 birds)</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 17, 1964</td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

One of the birds collected on Sept. 7, 1964 yielded 3 male and 10 female *Myrsidea interrupta* and the bird collected on Sept. 14, 1964 yielded 3 females of the same species.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middletown, Conn.</td>
<td>Nov. 6, 1925</td>
<td>O. L. Austin, Jr. (USNM Slide)</td>
</tr>
<tr>
<td>Edgartown, Mass.</td>
<td>June 30, 1930</td>
<td>H. K. Gouk, Jr. (USNM Slide)</td>
</tr>
<tr>
<td>Hanover, N. H.</td>
<td>No Date</td>
<td>Cornell Coll.</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Feb. 7, 1948</td>
<td>E. O. Hooghkirk</td>
</tr>
</tbody>
</table>

*Myrsidea latifrons* (Carriker, 1910)


Type host: *Riparia riparia* (Linnaeus)—Bank Swallow.

Described by Carriker from a collection in Michigan. This species has also been reported by Peters (1928) from Ohio and Peters (1936) from South Carolina.
Measurements: Male (Carriker Type) Female

<table>
<thead>
<tr>
<th></th>
<th>Male (Carriker Type)</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.32</td>
<td>--</td>
</tr>
<tr>
<td>Head Width</td>
<td>.43</td>
<td>--</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.53</td>
<td>.62</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.45</td>
<td>1.60</td>
</tr>
</tbody>
</table>

Material examined: *Riparia riparia* (Linnaeus)

Passadumkeag, Maine       June 16, 1938       A. E. B. (Slide)
Kingston, R. I.           July 18, 1962       A. Hawkes (Slide)

The Maine material contained 5 female and 2 immature specimens of *Myrsidea latifrons* (Carriker, 1910). The Rhode Island material contained 1 male and 3 immature specimens of *Myrsidea sp.* The species was probably *latifrons* but the material was unmounted making a positive identification very difficult. *Myrsidea latifrons* (Carriker, 1910) is the only known amblyceran infesting this species of bird.

*Myrsidea major* (Piaget, 1880)


Type host: *Plectrophenax nivalis* (Linnaeus) -- Snow Bunting.

I can find no records of this species having been collected in the United States. I have collected only one Snow Bunting and it was free of Mallophaga. The M. C. Z. has Mallophaga from the Snow Bunting collected at Kittery, Maine, and Springfield, Massachusetts, but none were this species.
Myrsidea melanorum (Kellogg, 1896)

Type species: Plectrophenax nivalis (Linnaeus)—Rufous-sided Towhee.

Kellogg described this species from a collection made in Kansas. Peters (1936) records it from Alabama, Florida, New York, South Carolina, and Virginia.

Female—Body, length 1.37 mm, width .56 mm; pale golden brown, with a black occipital margin to head. Head length .31 mm, width .47 mm, front rounded, temples broad, rounded, occipital margin concave, straight in middle, with two rather long and two short hairs. Prothorax with slightly produced blunt lateral angles bearing three spines; nearly straight posterior margin with four rather long hairs. Metathorax with slight lateral emargination, a spine and a very long hair in the posterior angles and eight weak hairs along the posterior margin. Abdomen short, broad, ovate; a single very long hair and a spine in posterior angles of segments (Kellogg, 1896).

Material examined: Plectrophenax nivalis (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epping, N. H.</td>
<td>June 4, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Keene, N. H.</td>
<td>Aug. 21, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Rochester, N. H.</td>
<td>May 30, 1965</td>
<td>B. Smith</td>
</tr>
</tbody>
</table>

All of the above were free of Myrsidea melanorum (Kellogg, 1896)

Myrsidea palloris (Carriker, 1903)

Menopon palloris Carriker, 1903. Univ. Stud. Nebr., 3: 189, pl. 8, fig. 3.
Type host: Stelgidopteryx ruficollis (Vieillot)—Rough-winged Swallow.

I have no data on this species of Myrsidea and I have not collected a Rough-winged Swallow.
Myrsidea quadrifasciata (Piaget, 1880)

Type host: *Passer domesticus* (Linnaeus)—House Sparrow.

I could find no records of this species being collected in the United States. I have collected 44 House Sparrows without finding this species of *Myrsidea.*

Myrsidea quadrimaculata (Carriker, 1902)

*Colpocephalum quadrimaculatum* Carriker, 1902. *J. N. Y. Ent. Soc.,* 10: 223, pl. 21, fig. 4.
Type host: *Loxia curvirostra* Linnaeus—Red Crossbill.

Described from a single male collected in Nebraska in 1901. There appear to be no published records of its collection in the United States since that time. Carriker (1902) says that it is readily recognized by the bold blackish bands on the ventral surface of the thorax, which show nearly as plainly from above as below.

Measurements of Type Male:

- Head Length .27
- Head Width .41
- Abdomen Width .49
- Total Length 1.17

Material examined: *Loxia curvirostra* Linnaeus

None.

Myrsidea ridulosa (Kellogg and Chapman, 1899)

Type host: *Dendroica petechia* (Linnaeus)—Yellow Warbler.

The species was described from specimens collected in California. The only other record is from Utah, Stanford, 1932.
Myrsidea rustica (Giebel, 1874)


Type host: Hirundo rustica Linnaeus--Barn Swallow.

This is a common species of Mallophaga and it is often found on the Barn Swallow. Osborn (1896) reports it from Iowa, Geist (1931) from Ohio, Peters (1936) from Vermont and Emerson (1940) records it from Oklahoma.

Material examined: Hirundo rustica Linnaeus

Albany, N. H. May 15, 1964 J. E. K.
Strafford, N. H. June 4, 1965 B. Smith
Portsmouth, N. H. June 23, 1965 B. Barrett

The Albany, New Hampshire, material yielded 2 female, 1 male, and 1 immature Myrsidea rustica and the collection from Portsmouth, New Hampshire, yielded a single immature specimen of the same species.

Material examined: Slides.

Groton, Mass. June 14, 1938 Coll. ? (USNM Slide)

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>2 Females</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.30</td>
<td>.30 .33</td>
</tr>
<tr>
<td>Head Width</td>
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<td>.48 .46</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.30</td>
<td>.30 .28</td>
</tr>
<tr>
<td>Metathorax Width</td>
<td>.42</td>
<td>.45 .45</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.73</td>
<td>.93 1.03</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.38</td>
<td>1.60 1.75</td>
</tr>
</tbody>
</table>
Myrsidea troglodyti (Denny, 1842)

Menopon troglodyti Denny, 1842. Mon Anopl. Brit.: 220 and 201, pl. 18, fig. 7.
Type host: Troglodytes troglodytes (Linnaeus)—Winter Wren.

I have found no published records of the collection of this species of Myrsidea in the United States and the only collection I have of the Winter Wren is from Albany, New Hampshire, August 4, 1964, A. H. Mason. The bird was free of Mallophaga.
PIAGETIELLA

Type species: Tetrophthalmus chilensis Grosse, 1885
(A synonym of Piagetiella bursaepelceni (Perry, 1876)).

Type species: Piagetta ragazzii Picaglia, 1884
(By subsequent designation by Harrison, 1916, Parasitology, 9: 24).


Head broader than long, laterodorsal margin with deep, narrow preocular slit. Temporal lobes very much expanded and rounded. Antennae lying in spherical excavations of dorsal margins of head, partly covered by laterodorsal margins. Gular and prosternal plates well developed. Prosternum with more than two median setae. Abdomen narrow, very elongate, sternite III with two or more combs, sternite IV with or without combs. These are large Mallophaga; males range from 3.8 to 5 millimeters in length. (fig. 19).

Members of this genus inhabit the inside of the pouch of pelicans and cormorants. In New England, at present, there are no described species from the Great Cormorant or the Double-crested Cormorant, the only hosts for this genus found in this area.
PSEUDOMENOPON

Type species: Menopon tridens Burmeister, 1838
(A synonym of Pseudomenopon pilosum (Scopoli, 1763).

Head broad, tribangular in outline, frons broadly rounded, and with or without a pair of ventral sclerotized processes arising near base of palpi. This genus is readily recognized by the large, usually heavily sclerotized, tripartite gular plate. Prothorax short; pterothorax longer and wider than prothorax, with straight, divergent sides and straight to strongly convex posterior margins. Abdomen short, that of male usually near-oval, female with sides of abdomen usually parallel. Abdominal pleurites with posteroventral angles prolonged posteriorly as pointed processes. Posterior femur and sternites III-V or VI with small scattered brushes of normal setae. Typical adult specimens of this genus average 1.75 to 2 millimeters in total length.
Pseudomenopon insolens (Kellogg, 1896)


Type host: Podiceps caspicus (Hablizl)—Eared Grebe.

This may be an error and the type host may be Fulica americana Gmelin--American Coot.

Pseudomenopon par (Kellogg, 1896)


Type host: Aechmophorus occidentalis (Lawrence)—Western Grebe.

This may be an error and the type host may be Fulica americana Gmelin--American Coot.

Pseudomenopon pilosum (Scopoli, 1763)


Type host: Fulica atra (Linnaeus)—European Coot.

New England host:
Fulica americana Gmelin--American Coot.

These three species are mentioned together because both P. insolens and P. par may be synonyms of Pseudomenopon pilosum (Scopoli, 1763); (Emerson, 1964).

Stanford (1932) reports this species from Utah and Emerson (1940) reports it from Oklahoma. These appear to be the only reports (excluding Kellogg's original descriptions) of this species in the United States.

I have no collections of Fulica americana Gmelin and no specimens of Pseudomenopon pilosum (Scopoli, 1763) have been seen.
Pseudomenopon qadrii Eichler, 1952


Type host: Porzana porzana (Linnaeus).
New England host: Porzana carolina (Linnaeus)–Sora.

Peters (1928) reports Pseudomenopon pilosum from Ohio, and Peters (1936) reports Pseudomenopon pilosum from South Carolina. Both recoveries are probably P. qadrii.

Material examined: Porzana carolina (Linnaeus)

Mt. Desert Isl., Maine Aug. 23, 1937 A. E. B.
No Locality No Date U. N. H. Coll.

The Mt. Desert collection yielded a single female Pseudomenopon qadrii Eichler, 1952. (fig. 20).
TRINOTON

   Type species: Trinoton conspurcatum Nitzsch, 1818.
   (A synonym of Trinoton anserinum (J. C. Fabricius, 1805).


   Type species: Trinoton femoratum Piaget, 1880.

Laterodorsal margin of head with small protuberance bearing setae; laterodorsal emargination of varying depth. This emargination often overlaps the eye giving the appearance of a deep preocular slit. First and second segments of antennae with distal anterior expansions. Thorax strongly developed and heavily sclerotized; meso- and metathorax separated by distinct suture and neither similar in shape to abdominal segments, the first two with spiracles. Chaetotoxy consisting of long and short setae of normal appearance and stout, spine-like setae. These large Menoponidae are not rigidly host specific and are the most common amblyceran found on wild ducks in America north of Mexico. Species of this genus are also found on members of the Family Phoenicopteridae, Order Ciconiformes.
Trinoton anserinum (J. C. Fabricius, 1805)


Pediculus anseris Sulzer, 1776. (nec Linnaeus, 1758). Abgek.

Gesch. Insekten: 241, pl. 29, fig. 4.

Liotheum conspurcatum Nitzsch, 1818. Germar's Mag. Ent. 3: 300

(tr for P. anseris Sulzer, 1776).


Type host: Anser anser (Linnaeus)--Domestic Goose.

New England host:

Branta canadensis (Linnaeus)--Canada Goose.

Peters (1936) has reported this species from Georgia and Emerson (1940) reports it from Oklahoma.

Clay and Hopkins (1960) separate the genus into four main groups.

The querquedulae group, the only one found in New England, is characterized by dorsal prothoracic spine-like setae less than 8 in number, and gular area with short, stout, spine-like setae. The querquedulae group can be separated by the character of the chaetotaxy into two species, one T. querquedulae being found on Anas and related genera and one T. anserium on Anser and related genera. T. anserinum has more numerous setae of which proportionally fewer are spine-like and has small setae making up the brushes of the 3rd femora and sternites IV and V being more numerous.

Material examined: Branta canadensis (Linnaeus)

Bar Harbor, Maine April 10, 1938 A. E. B.
Durham, N. H. Oct. 29, 1952 D. Dupee
Vassalboro, Maine Oct. 30, 1959 Nash

The Bar Harbor collection yielded 2 male, 4 female, and 1 immature Trinoton anserium (fig. 21). A female was recovered from each of the Vassalboro, Maine, and the Durham, New Hampshire, collections.
Measurements:

<table>
<thead>
<tr>
<th></th>
<th>2 ♂ (Bar Harbor)</th>
<th>2 ♀ (Bar Harbor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Width</td>
<td>1.74</td>
<td>1.56</td>
</tr>
<tr>
<td>Total Length</td>
<td>5.94</td>
<td>5.22</td>
</tr>
</tbody>
</table>

Trinoton querquedulae (Linnaeus, 1758)

Ricinus lari De Geer, 1778. Mem. Hist. Ins., 7: 77, pl. 4,
fig. 12.
Trinoton pygmaeus Kolenati, 1846. Melet. Ent., 5: 138, pl. 19,
fig. 5.
Type host: Anas crecca Linnaeus—Common Teal.
New England hosts:
Any duck found in New England is a potential host for this species
of Mallophaga.

This species can be separated from Trinoton anserinum by the
characters given on the previous page. I have collected T.
querquedulae from Melanitta perspicillata, Mergus serrator, Anas
rubripes, Aix sponsa, Aythya collaris, and have records of its occurring
on specimens too numerous to mention.
RICINIDAE

Members of this family of Mallophaga can be recognized from those of the other families of the suborder Amblycera by the following characteristics: tarsi of all legs two clawed; antennae situated in capsules which open ventrally, the capsules not bulbous and not producing lateral swellings on the head. Abdomen with lateral contours but slightly broken by notching at the junction of the segments. This family is small and includes only two genera found in New England which can be separated by the following key:

Head deeply emarginate laterally; abdomen stout (on Apodiformes)------------------Trochiloeetes Paine and Mann, 1913

Head not constricted on the lateral margins; body more or less slender (on Passeriformes, occasionally on hummingbirds)------------------------Ricinus DeGeer, 1778
RICINUS

Type species: *Ricinus fringillae* DeGeer, 1778.
(By subsequent designation by Neumann, 1906, Bull. Soc. Zool. Fr., 20: 56.)


Type species: *Ricinus nitidissimum* Nitzsch, 1818
(A synonym of *Ricinus fringillae* DeGeer, 1778).

Large species 2.5 to 5 millimeters in length, body elongate. Head broadly conical, straight or slightly concave on lateral margins, without ocular emarginations, forehead broad and usually truncate or flatly convex in front. Temporal regions angulate. Underside of forehead with two small motile muscular lobes projecting caudad slightly beyond lateral margins. Palpi prominent; antennae always concealed and very short. Thorax longer than head, meso- and metathorax completely fused, posterior width of metathorax equal to anterior width of first abdominal segment. Legs robust with little coloration and few hairs. First tarsal segment with a small double lobe, second rather short. Abdomen elongate-elliptical, ninth segment broad and rounded. General coloration pale brown to yellowish with lateral "bands" on abdomen.
**Ricinus angulatus** (Kellogg, 1896)


Type host: *Tyrannus tyrannus* (Linnaeus)—Eastern Kingbird.

Kellogg described this species from two females taken in Lawrence, Kansas. Carriker (1957) selected the lectotype and stated that the material from the other hosts will prove to be different.

The species is distinguished by the greatly produced occipital angles extending nearly to the middle of the prothorax.

Material examined: *Tyrannus tyrannus* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>July 19, 1965</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>July 29, 1965</td>
<td>E. Meader</td>
<td></td>
</tr>
</tbody>
</table>

*R. angulatus* was not found.

**Ricinus arcuatus** (Kellogg and Mann, 1912a)


Type host: *Tyrannus vociferans* Swainson—Cassin's Kingbird.

This species is recognized by two setae directly anterior to the eye, the posterior angles of the head with two setae and the sides of the prothorax with three long setae (fig. 22).

Cassin's Kingbird is not found in New England but *Ricinus arcuatus* is not strictly host specific and is found here on *Tyrannus tyrannus* (Linnaeus)—Eastern Kingbird.

Material examined: *Tyrannus tyrannus* (Linnaeus).

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>July 19, 1965</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>July 29, 1965</td>
<td>E. Meader</td>
<td></td>
</tr>
</tbody>
</table>
The July 19, 1965, Eastern Kingbird yielded 1 male and 2 immature 

**Ricinus arcuatus.**

Measurements: **Ricinus arcuatus** (Kellogg and Mann, 1912a)

1 Male

- Head Length: .61
- Head Width: .64
- Prothorax Width: .58
- Pterothorax Width: .69
- Abdomen Length: 1.44
- Abdomen Width: .84
- Total Length: 2.79

**Ricinus diffusus** (Kellogg, 1896)


Type host: *Passercula sandwichensis* (Gmelin)—Savannah Sparrow.

Described from 1 female from the type host in California. Peters (1936) has reported it from Massachusetts and South Carolina.

Material examined: *Passercula sandwichensis* (Gmelin).

- **Durham, N. H.** Sept. 29, 1921 P. R. Lowry
- **Martha's Vineyard, Mass.** April 23, 1933 L. B. Lunz, Jr. (USNM Slide)
- **Madbury, N. H.** Sept. 22, 1964 J. E. K.
- **Madbury, N. H.** May 18, 1965 B. Smith
- **Pittsburg, N. H.** Oct. 9, 1965 J. E. K.

The Durham, New Hampshire, collection contained 1 male and 1 female 

**Ricinus diffusus** (Kellogg, 1896). The Martha's Vineyard (USNM Slide) contained a single female *Ricinus* sp. which is probably *R. diffusus.*
<table>
<thead>
<tr>
<th>Measurements</th>
<th>1 Male</th>
<th>1 Female</th>
<th>Female (Kellogg's type)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.64</td>
<td>.72</td>
<td>.80</td>
</tr>
<tr>
<td>Head Width</td>
<td>.63</td>
<td>.73</td>
<td>.70</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.54</td>
<td>.63</td>
<td>--</td>
</tr>
<tr>
<td>Pterothoax Width</td>
<td>.73</td>
<td>.88</td>
<td>--</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.86</td>
<td>2.14</td>
<td>--</td>
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<tr>
<td>Abdomen Width</td>
<td>.84</td>
<td>1.08</td>
<td>1.09</td>
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<tr>
<td>Total Length</td>
<td>3.30</td>
<td>3.84</td>
<td>4.00</td>
</tr>
</tbody>
</table>

**Ricinus frenatus** (Burmeister, 1838)
Type host: *Troglodytes troglodytes* (Linnaeus)—Winter Wren or
*Regulus regulus* (Linnaeus).

Beyond the fact that this species has been recorded, I have no in­
formation concerning it. Procter (1938) reports it from the Golden-
crowned Kinglet in Maine. I have shot a single Winter Wren in Albany,
New Hampshire, August 4, 1964. It was free of Mallophaga.

**Ricinus medius** Uchida, 1926
Ricinus medius Uchida, 1926. J. Coll. Agri. Tokyo, 9: 54 (nn for
*P. intermedium* Uchida, 1915).
Type host: *Parus ater insularis* Hellmayr or *Parus atricapillus*
Linnaeus—Black-capped Chickadee.

Material examined: *Parus atricapillus* Linnaeus  
Bar Harbor, Maine Feb. 23, 1936 E. Anthony
No Locality No Date Coll. ?
Epsom, N. H. Feb. 28, 1964 J. E. K.
Loudon, N. H. March 13, 1964 J. E. K.
Dunbarton, N. H. March 20, 1964 J. E. K. (2 birds)
Durham, N. H. March 27, 1964 J. E. K.
New Boston, N. H. March 31, 1964 J. E. K.
Milford, N. H. April 2, 1964 J. E. K.
Weare, N. H. April 10, 1964 J. E. K.
Hopkinton, N. H. April 24, 1966 J. E. K.
Material examined: *Parus atricapillus* Linnaeus (continued)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newfields, N. H.</td>
<td>Sept. 11, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Danville, N. H.</td>
<td>Nov. 17, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Windham, N. H.</td>
<td>Nov. 22, 1964</td>
<td>J. E. K.</td>
<td>(2 birds)</td>
</tr>
<tr>
<td>Pittsfield, N. H.</td>
<td>Nov. 28, 1964</td>
<td>J. E. K.</td>
<td>(2 birds)</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>May 10, 1965</td>
<td>J. E. K.</td>
<td></td>
</tr>
</tbody>
</table>

I have seen a single male *Ricinus* sp. from *Parus atricapillus* Linnaeus (Bar Harbor, Maine, February 23, 1936), but due to the fact that I was unable to obtain Uchida's original paper describing this species, I am not able to make a specific identification.

*Ricinus melospizae* (McGregor, 1917)


Type host: *Melospiza melodia* Wilson—Song Sparrow.

Described from two females collected in Minnesota. Head evenly rounded in front and the occipital angles are produced posteriorly only slightly unlike *Ricinus angulatus* and *R. diffusus*. Prothorax roughly hexagonal; pterothorax with a slight swelling on the anterior third of the sides; abdomen with sides subparallel, terminal segment bluntly rounded, with four long hairs and a fringe of ten setae, lateral bands almost colorless.

Peters (1928) reports this species from Ohio, and Peters (1936) from Delaware, Michigan, New Hampshire, Ohio, and Pennsylvania. I have made over 25 collections of *Melospiza melodia* Wilson from Maine, New Hampshire, Vermont, and Massachusetts without finding this species. However, The Boston Museum of Science has a slide of this species col-
lected in Cohasset, Massachusetts, May 5, 1926, and Dr. K. C. Emerson has a slide of a female collected on Cape Cod, Massachusetts, by Dr. C. M. Herman (no date).

**Ricinus merulae** (Durrant, 1906a)

*Physostomum merulae* Durrant, 1906a. Ohio Nat., 7: 35, fig. 1d.

Type host: *Turdus migratorius* Linnaeus—Robin.


Measurements of type female:

- Head Length: .75
- Head Width: .75
- Thorax Width: 1.04
- Total Length: 4.70
- Total Width: 1.30

Front of head broad and evenly rounded, sides diverging and slightly swelling, occipital angles extending posteriorly with three large bristles along margin evenly spaced. Metathorax larger than prothorax, rounded in front widely diverging in rear. Prothorax with anterior margin concave. Abdomen rounded and oblong.

The only published report, besides the original description of this species occurring in the United States is by Peters (1936) who records *Ricinus* sp. as occurring in Delaware and Virginia on the Eastern Robin, which is most likely this species. I have examined 33 robins from Maine, New Hampshire, and Massachusetts without finding this species of Mallophaga.
Ricinus pallidus (Kellogg, 1896)
Type host: Junco sp.

Described from two females and a young specimen collected in Lawrence, Kansas. The only other records of this species appear to be by Peters (1928) from Ohio and Peters (1936) from Maryland.

I have examined 2 females from Durham, New Hampshire, (1937), which are Ricinus but which do not correspond to Kellogg's measurements (cf. R. diffusus).

Material examined: Junco hyemalis (Linnaeus)

Durham, N. H. Apr. 5, 1937 J. G. Conklin
Durham, N. H. Nov. 17, 1965 D. Adams

Junco oreganus (Townsend), although not common in New England, occurs casually here in the winter months and is possibly a host for R. pallidus.

Ricinus serratus (Durrant, 1906)
Physostomum serratum Durrant, 1906. Ohio Nat., 6: 528, fig. 1b.
Type host: Eremophila alpestris (Linnaeus)—Horned Lark.

Described from a single female collected at Ft. Collins, Colorado, by J. H. Cowen. This is the only published record of this species in the United States.

Durrant describes the female as 4.7 mm long and 1.3 mm wide, a very large Ricinus. Head .88 mm long, .86 mm wide, lateral margins slightly concave, occipital border broadly concave. Thorax much broader than long. Abdomen with wide marginal bands and with sides slightly swelling at the middle.

The Horned Lark is a casual winter visitor to New England at best.
It is mentioned in all of the checklists of New England birds but it is not often seen and rarely captured. I have only one record of Mallophaga being collected from *Eremophila alpestris* (Linnaeus) in New England: Belchertown, Massachusetts, March 13, 1926, by Dr. E. G. Rowland. A Philopterus sp. was collected from this bird and is now in the Boston Museum of Science collection.

*Ricinus subhastatus* (Durrant, 1906)

*Physostomum sub-hastatum* Durrant, 1906. Ohio Nat., 6: 528, fig. 1a.

Type host: *Pipilo erythrophthalmus* (Linnaeus)—Rufous-sided Towhee.

Measurements of type female:

- Head Length: .73
- Head Width: .60
- Thorax Width: .65
- Total Length: 3.17
- Total Width: .98


Material examined: *Pipilo erythrophthalmus* (Linnaeus).

- Epping, N. H. June 4, 1964 J. E. K.
- Keene, N. H. Aug. 21, 1964 J. E. K.
- Rochester, N. H. May 30, 1965 B. Smith

None of the above collections contained *Ricinus subhastatus* (Durrant, 1906).

*Ricinus thoracicus* (Packard, 1870)

*Nirmus thoracicus* Packard, 1870. Amer. Nat., 4: 94, pl. 1, fig. 5.

Type host: *Plectrophenax nivalis* (Linnaeus)—Snow Bunting.

I have no data on this species of Mallophaga.
TROCHILOECETES

Trochiloecetes Paine and Mann, 1913. Psyche, 20: 21
Type species: Physostomum prominens Kellogg and Chapman, 1899.

The genus Trochiloecetes is represented in New England by a single species, Trochiloecetes lineatus (Osborn, 1896). All members of this genus are parasitic on members of the family Trochilidae of the order Apodiformes.

Trochiloecetes lineatus (Osborn, 1896)
Type host: Archilochus colubris (Linnaeus)—Ruby-throated Hummingbird.

The key to the genera under the family Ricinidae and fig. 23 will serve well for this single species found in this area.

Carriker (1960) has reviewed this genus and places Trochiloecetes lineatus in the genus Trochiliphagus. This was understandable since he had no material from the type host for examination but only the original description. For the purposes of this paper, I have followed the classification of Emerson (1964).

Material examined: Archilochus colubris (Linnaeus)

Lincoln, Maine May 30, 1936 Coll. ?

The collection from Lincoln, Maine, yielded 4 female specimens of T. lineatus. The Bartlett collection was negative.
<table>
<thead>
<tr>
<th>Measurements:</th>
<th>4 Females (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.43</td>
</tr>
<tr>
<td>Head Width</td>
<td>.45</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.35</td>
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<tr>
<td>Pterothorax Width</td>
<td>.46</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.71</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.60</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.54</td>
</tr>
</tbody>
</table>
KEY TO THE ISCHNOCERA OF NEW ENGLAND BIRDS

1. Preantennal region furnished with one or more pair
   of inflated or strong spines-----------------------------2
   Preantennal region without modified spines-------------3

2. Two pair of anterior clypeal spines present; preantennal
   region with a median suture-------------------------COLUMBICOLA
   One pair of anterior clypeal spines; preantennal
   region with a transverse suture----------------------ANATICOLA

3. Anterior margin of head pincer-like---------------------4
   Anterior margin of head not pincer-like----------------5

4. Anterior margin of head pincer-like with open
   or closed blades--------------------------------------ORNITHOBIUS
   Anterior margin of head pincer-like flanked
   by hyaline flaps-------------------------------------INCIDIFRONS

5. Lateral border of preantennal region with 4-6
   circular incrassations-----------------------------FALCOLIFEURUS
   Lateral border of preantennal region without
   such circular incrassations------------------------6

6. Preantennal region with a pair of posteriorly
   directed spine-like processes----------------------PHYSCONELLOIDES
   Preantennal region without a pair of posteriorly
   directed spine-like processes----------------------7

7. Head with hyaline margin and dorsal anterior plate
   lacking; antennae of ♀ filiform; at least one
   segment of ♂ antennae enlarged or with an appendage---8
   Head with dorsal anterior plate and hyaline margin
   present even if one or both may be inconspicuous----13

8. Postantennal region greatly expanded; angular in
   shape--------------------------------------------------12
   Postantennal region only slightly expanded;
   slender body form---------------------------------------9

9. Dorsal surface of preantennal region without a
   transverse suture-------------------------------------10
   Dorsal surface of preantennal region with a
   transverse suture-----------------------------------RHYNONIRMUS

10. Head of male and female with chitin of anterior
    portion of head arranged into a number of
    projections-------------------------------------------OXYLIPEURUS
    Head without such chitinous projections---------------11
11. Female tergal plates with a median division; male width at temples not less than at antennae-----------------------------CUCLOTOGASTER
   Female tergal plates entire, without a median division; male width at temples less than at antennae----------------------------LIPEURUS

12. First abdominal segment larger than those following; temples not prolonged beyond the ocular margin-------------------GONIODES
   First abdominal segment smaller than those following; temples prolonged beyond the ocular margin-------------------------CHELOPISTES

13. Dorsal anterior plate bearing numerous crescentic papillae on the dorsal surface--------------------------ARDEICOLA
   Dorsal anterior plate without such papillae-----------------------14

14. Dorsal anterior plate large with a longitudinal slit; gular plate large; abdominal segment IX of ♀ bilobed----------------FULICOFFULA
   Without above combination of characters------------------------15

15. Head wider than long---------------------------------16
   Head longer than wide----------------------------------------17

16. Antennae similar in both sexes or 3rd segment of ♀ with an appendage; ♀ with 2 genital setae on a ventral tubercle on each side------------------------RALLICOLA
   Antennae similar in both sexes; ♀ without genital setae on a ventral tubercle on each side--------------------------STREGIPHILUS

17. Antennae similar in both sexes or 3rd segment of ♀ with an appendage; ♀ genitalia simple--------------------------RALLICOLA
   Antennae of ♀ with an appendage on the 1st or 3rd segment; ♀ genitalia very complex---------------------PECTINOPYGUS
   Antennae similar in both sexes----------------------------------18

18. Anterior margin of head with a deep emargination---------------------ACIDOPROCTUS
   Head without such emargination-------------------------------19

19. Head with a narrow inconspicuous hyaline margin and small dorsal anterior plate---------------------------LUNACEPS
   Head lacking the combination of characters of an inconspicuous hyaline and a small dorsal anterior plate------------------------20

20. Head with a dorsal anterior plate------------------------21
   Head without a dorsal anterior plate-------------------------22

21. Tergites divided medially-------------------------------24
   Tergites not divided medially-------------------------------22
22. Dorsal transverse suture present at the level of the antennae; preantennal region rectangular—CRASPEDONIRMUS
Dorsal transverse suture absent at the level of the antennae; preantennal region trapezoidal—CUMMINGSTIELLA
Tergites not divided medially; preantennal region rounded in front----------------------------------23

23. Dorsal surface of head without a transverse suture---------------------QUADRACEPS
Dorsal surface of head with a transverse suture at or posterior to the antennae—CARDUICEPS

24. Tergites divided medially; head not rounded in front but rectangular or trapezoidal—25
Tergites III-IV of ♀ divided medially; head rounded in front-------------------BRUELIA

25. Hyaline margin free throughout extent of preantennal region; preantennal region apically concave with a tuft of 3 or more long setae at each anterolateral angle—CUCULOECUS
Preantennal region without above combination of characters-----------------------------------26

26. Slender body form; width of abdomen of ♀ no wider than head---------------------------------27
Robust body form; abdomen of both sexes wider than head--------------------------------------28

27. Terminal abdominal segment of ♂ bilobed----------------AQUANIRMUS
Terminal abdominal segment of ♂ not bilobed---------MULTICOLIA

28. Preantennal region rounded with a free hyaline margin throughout; dorsal surface of head with peg-like spines—ANATOECUS
Preantennal region of head without above combination of characters---------------------------------29

29. Premarginal bands and ventral bands of head extending beyond anterior margin of dorsal anterior plate----------------CRASPEDORRHYNCHUS
Without above combination of characters-----------------------------------------------30

30. Paramers of ♂ genitalia long, curved; abdominal sternite VII of ♀ with a posteriorly directed projection at each anterolateral angle—SAEMUNDSSONIA
Without above combination of characters---------------------------------------------------31

31. Dorsal anterior plate not emarginate anteriorly------------------------------------------32
Dorsal anterior plate emarginate anteriorly---------STURNIDOECUS
32. Temples equal to or slightly expanded beyond
the width of the antennal region---------------------PENEHTRIMUS
Temples expanded well beyond the width of the
antennal region--------------------------------------33
33. Parameres of _♂_ genitalia short and blunt---------PHILOPTERUS
Parameres of _♂_ genitalia elongate and tapering------STRIGIPHILUS
34. Head longer than wide---------------------------------37
Head wider than long-----------------------------------35
35. Temples angular--------------------------------------36
Temples broadly rounded-----------------------------ROTUNDICEPS
36. One pair of medium length setae on each
sternite and tergite-------------------------------GONIOCOTES
A few small setae scattered on some sternites
and tergites----------------------------------------CAMPANULOTES
37. Tergal plates II–VI of both sexes transversely
continuous-------------------------------------------38
Some tergal plates on segments II–VI of one sex,
usually the _♀_ divided medially------------------39
38. Temporal carina thickened and with a cellulated
appearance------------------------------------------PICICOLA
Temporal carina thin, normal in appearance----------DEGEERTIELLA
39. First apparent abdominal tergite of _♀_ divided
medially by a clear area---------------------------LAGOPPOECUS
First apparent abdominal tergite of _♀_ divided
medially by an indistinct suture--------------------CUCULICOLA
ACIDOPROCTUS

Type species: Acidoproctus marginatus Piaget, 1878, a synonym of Acidoproctus rostratus (Rudow, 1866) (by subsequent designation by Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 326).


Type species: Heteroproctus hilli Harrison, 1915.

This genus is characterized by the presence of a deep angular emargination on the anterior margin of the head. Antennae of the male with an appendage on the third segment. Temporal lobes long, rounded posteriorly, with a few setae. Prothorax subquadrangular with prominent stigmata at the posterolateral angles; metathorax widest posteriorly and wider than head. Abdomen elongate-oval, nine segmented, the segments without setae except at their posterolateral angles; eighth segment appearing to be double. In this genus the abdomen is parallel sided, tapering rapidly from the seventh segment to an acuminate point posteriorly in the female but only gradually in the male to a wide, bilobed segment. Members of this genus are quite long measuring three to four millimeters. Species of this genus are uncommon in collections and distribution on hosts of the Anseriformes is not well known. Carriker (1949a, 1954), and Timmermann (1962), have discussed the genus Acidoproctus.
Acidoproctus kelloggi (Carriker, 1902)  

Type host: Aytha valisineria (Wilson)—Canvasback.

Head elongate cordate, rather broadly rounded in front with six short bristles on each side between the trabeculae and the clypeal notch; one short bristle on each side just within the opening of the notch; temples with one weak hair and five short bristles; occiput deeply concave; eye prominent, convex and, contrary to Piaget's description, has a large stiff bristle upon the dorsal surface. Prothorax short quadrilateral, with rounded angles and convex sides. The metathorax longer than the prothorax and nearly twice as wide; sides rounded and widely diverging; posterior margin sharply angulated with a few weak bristles; a pair of long hairs at the middle on each side and three at the posterior angles. Abdomen elongate-oval, constricted posteriorly and widest at the second segment; lateral margins of each segment convex, more so posteriorly (fig. 24).

Measurements: (Carriker, 1902)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.76</td>
<td>.77</td>
</tr>
<tr>
<td>Head Width</td>
<td>.64</td>
<td>.65</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.80</td>
<td>.72</td>
</tr>
<tr>
<td>Total Length</td>
<td>3.50</td>
<td>3.65</td>
</tr>
</tbody>
</table>

This species was described from 5 males and 1 female collected from Aytha valisineria (Wilson) Lincoln, Nebraska, March 25, 1901. I have no collections of this species of mallophagan. The Mallophaga collection at the Communicable Disease Center, U. S. Public Health Service, Atlanta, Georgia, contains specimens of Acidoproctus kelloggi (Carriker, 1902) taken from a Canvasback in Massachusetts.
ANATICOLA

Type species: Pediculus crassicornis Scopoli, 1763.

Elongate Ischnocera, adult males and females 3-5 millimeters in length. Clypeus narrowly rounded anteriorly. Dorsal anterior plate differing slightly in the two sexes, that of the female generally semi-lunate, longer than wide, rounded anteriorly and concave posteriorly with a ventral groove containing two hairs arising from unsclerotized spaces. Chaetotaxy of the ventral surface of the head characteristic, with hairs along the lateral margins but absent in front and elsewhere sparse or absent. Dorsal surface of head with two pustulated setae immediately above the level of the large antennal fossae. Antennae with first segment enlarged in male and third segment produced at apex. Prothorax small with sides slightly convex; pterothorax larger and slightly wider than prothorax. Sternal plate of pterothorax is large although sometimes not apparent, joined by a sclerotized rod to a smaller plate which projects into the first abdominal segment. Abdomen elongate; spiracles on segments II-VII. Short, rod-like parameres of male genitalia lie within the mesosomal plate. Penis a straight tube, forked at proximal end. (fig. 25).
Anaticola anseris (Linnaeus, 1758)

(\textit{nn} for \textit{P. anseris} Linnaeus, 1758).
Ornithobius anseris Gurt, 1842. Mag. ges. Thierheilk, 8: 426,
pl. 4, figs. 12-13.
Lipeurus bishoppi McGregor, 1917a. Psyche, 24: 111, pl. 6, figs.
2 and 4.
62: 84, fig. 51.

Type host: Domestic Goose.

The genus \textit{Anaticola} is in need of revision. The species name
\textit{anseris} and its subspecies are presently used to designate those
\textit{Anaticola} found on geese.

Measurements: \textit{Anaticola anseris} (Linnaeus, 1758)
(from Clay and Hopkins, 1950)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.61</td>
<td>.68</td>
</tr>
<tr>
<td>Head Width</td>
<td>.42</td>
<td>.48</td>
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<tr>
<td>Abdomen Length</td>
<td>1.59</td>
<td>2.06</td>
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<tr>
<td>Abdomen Width</td>
<td>.51</td>
<td>.73</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.76</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Material examined: \textit{Branta bernicla} (Linnaeus)--Brant

Hampton, N. H. Nov. 8, 1964 B. Barrett
Hampton, N. H. Oct. 28, 1965 B. Barrett

The 1964 collection yielded 9 female \textit{A. anseris}, and the 1965 col-
lection yielded 2 males and 5 females.

Material examined: Slides

Rye, N. H. Nov. 17, 1933 L. R. Nelson
(USNM Slide)

1 female \textit{Anaticola anseris} from \textit{Branta bernicla}. 


A specimen of *A. anseris* from *Chen caerulescens* (Linnaeus)—Blue Goose.

Apparently *A. anseris* does not parasitize the Canada Goose, *Branta canadensis*. I have been unable to find records of its occurring on this species of bird and have not recovered it in seven examinations of Canada Geese.

**Anaticola crassicornis** (Scopoli, 1763)


Type host: *Anas platyrhynchos* Linnaeus—Mallard.

The species name *crassicornis* and its subspecies are used to designate those *Anaticola* found upon all Anatidae excluding the Cygninae, Anserinae and the Dendrocyginae. Members of this species can be separated from *A. anseris* mainly by the shorter length of the penis.

Length of penis (number of specimens in brackets):
(from Clay and Hopkins, 1951)

- *Anaticola crassicornis*—0.13 (1), 0.15 (7), 0.16 (1).
- *Anaticola anseris*—0.27 (3).

Material examined: *Anas platyrhynchos* Linnaeus.

No Locality No Date U. N. H. Coll.
Durham, N. H. Nov. 11, 1965 D. Gallup

The 1964 collection contained 1 male *A. crassicornis*. 
Material examined: **Anas rubripes** Brewster—Black Duck.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 29, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Plum Island,</td>
<td>Dec. 3, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Essex Co., Mass.</td>
<td></td>
<td>F. Burgess</td>
</tr>
<tr>
<td>Plum Island,</td>
<td>Oct. 16, 1965</td>
<td></td>
</tr>
<tr>
<td>Plum Island,</td>
<td>Nov. 2, 1965</td>
<td></td>
</tr>
</tbody>
</table>


Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middletown, Conn.</td>
<td>Oct. 2, 1925</td>
<td>O. L. Austin</td>
</tr>
</tbody>
</table>

Material examined: **Anas strepera** Linnaeus—Gadwall.

None.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wenham, Mass.</td>
<td>Nov. 21, 1927</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Wenham, Mass.</td>
<td>Nov. 21, 1927</td>
<td></td>
</tr>
</tbody>
</table>

Material examined: **Anas carolinensis** Gmelin—Green-winged Teal.

None.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
</table>

Material examined: **Anas discors** Linnaeus—Blue-winged Teal.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
<tr>
<td>No Hampton, N. H.</td>
<td>May 22, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Hampton, N. H.</td>
<td>Sept. 9, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>
The Hampton collection yielded 1 male *A. crassicornis*.

Material examined: Slides.

Seabrook, N. H. Sept. 2, 1936 Coll. ?

(USNM Slide)

Material examined: *Spatula clypeata* (Linnaeus)—Shoveler.

Brunswick, Maine Oct. 13, 1964 H. Tyler

(2 birds)

*A. crassicornis* was not found.

Material examined: *Aix sponsa* (Linnaeus)—Wood Duck.

No Locality

Strafford, N. H. Oct. 31, 1964 Coll. ?


Hampton, N. H. Oct. 28, 1965 B. Barrett

The Strafford collection yielded 1 female *A. crassicornis*. The Ossipee collection yielded 2 male and 2 female *A. crassicornis*. The Hampton collection yielded 4 male and 6 female *A. crassicornis*.

Material examined: Slides.

Middletown, Conn. Oct. 2, 1925 O. L. Austin

(USNM Slide)

Winchester, N. H. Sept. 22, 1934 L. R. Nelson

(USNM Slide)

Material examined: *Aythya affinis* (Eyton)—Lesser Scaup.

No Locality No Date U. N. H. Coll.

Anaticola crassicornis was not found.

Material examined: *Bucephala clangula* (Linnaeus)—Common Goldeneye.

Hampton, N. H. Oct. 28, 1965 B. Barrett

*A. crassicornis* was not found.
Material examined: Bucephala albeola (Linnaeus)—Bufflehead.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton, N. H.</td>
<td>Sept. 20, 1963</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

The Hampton, 1964, collection yielded 1 male and 5 female A. crassicornis. The Dover, 1964, collection yielded 2 female A. crassicornis.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye, N. H.</td>
<td>Nov. 1, 1934</td>
<td>L. R. Nelson</td>
</tr>
</tbody>
</table>

Material examined: Clangula hyemalis (Linnaeus)—Oldsquaw.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton, N. H.</td>
<td>Nov. 20, 1963</td>
<td>B. Barrett</td>
</tr>
<tr>
<td>Hampton, N. H.</td>
<td>Nov. 24, 1963</td>
<td>B. Barrett</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

A. crassicornis was not found.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye, N. H.</td>
<td>Nov. 21, 1933</td>
<td>L. R. Nelson</td>
</tr>
</tbody>
</table>

Material examined: Histrionicus histrionicus (Linnaeus)—Harlequin Duck.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
</table>

One female and two immature A. crassicornis were found.

Material examined: Somateria mollissima (Linnaeus)—Common Eider.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton, N. H.</td>
<td>Oct. 9, 1964</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

One female and many immature A. crassicornis were found.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
</table>
Material examined: *Melanitta deglandi* (Bonaparte)—White-winged Scoter.

Hampton, N. H. Oct. 5, 1964 B. Barrett (4 birds)
Hampton, N. H. Oct. 9, 1964 Coll. ?
Hampton, N. H. Nov. 2, 1965 B. Barrett (2 birds)
Hampton, N. H. Nov. 23, 1965 D. Brannigan

One of the four birds collected October 5, 1964, was infested with *A. crassicornis*. The October 9, 1964, collection contained a single specimen. One of the birds collected November 2, 1965, had 3 *A. crassicornis*, and the November 23, 1965, collection yielded 15 specimens.

Material examined: *Melanitta perspicillata* (Linnaeus)—Surf Scoter.

Hampton, N. H. Oct. 9, 1965 D. Brannigan

The October 3, 1963, collection yielded 2 immature *A. crassicornis*.

Material examined: Slides

Bristol, R. I. No Date Cornell Coll.

Material examined: *Oidemia nigra* (Linnaeus)—Common Scoter

Hampton, N. H. Nov. 21, 1963 B. Barrett
Hampton, N. H. Oct. 27, 1965 B. Barrett

The November 21, 1963, and the October 10, 1964, collections of *Oidemia nigra* each yielded a single female *A. crassicornis*.

Material examined: *Mergus serrator* Linnaeus—Red-breasted Merganser

No Locality No Date U. N. H. Coll.
No Locality No Date U. N. H. Coll.

*A. crassicornis* was not found.
Material examined: Slides

Chatham, Mass.
Winthrop, Maine

The Winthrop, Maine, collection contains

Anaticola crassicornis.
Material examined: Slides

Chatham, Mass. April 16, 1936 USNM Slide
Winthrop, Maine Nov. 11, 1953 A. E. B.

The Winthrop, Maine, collection contained 1 male and 5 female
Anaticola crassicornis.
ANATOECUS

   Type species: Anatoecus icterodes (Nitzsch, 1818).

   Type species: Cereopsocus clayae Keler, 1960.

   Type species: Docophorus pygaspis Nitzsch, 1866.

Short robust Philopteridae. Head with distinct hyaline margin, extending from each premarginal carina and rounded in front; large shield-shape dorsal anterior plate with posterior projection. Postmarginal carinae and temporal carinae well developed. Antennae filiform and similar in the two sexes. Prothorax with one lateral spine-like, and one long seta at each posterolateral angle. Pterothorax with one lateral spine-like seta on each side and 12 long setae along the dorsoposterior margin. Abdomen stout with well developed pleural plates. Tergite I undivided; tergites II-VIII divided medially; tergites IX-X fused, greatly narrowed, and continuous across the segment.

At the present time it is uncertain as to whether one or two species of Anatoecus infest birds of the order Anseriformes in New England. The females of the two possible species cannot be separated and the separation of the males is by the presence or absence of the "effractor" (Cumming, 1916: 652) in the male genitalia. The situation is complicated by the fact that both species may be present on the same species of host.
Anatoecus dentatus (Scopoli, 1763)

Type host: Anas platyrhynchos Linnaeus--Mallard.
Other New England hosts:
Mergus merganser Linnaeus--Common Merganser.
Spatula clypeata (Linnaeus)--Shoveler.
Somateria mollissima (Linnaeus)--Common Eider.

In the male of this species the "effractor" is present (fig. 26b).

All other characters are contained in the genus description.

Measurements: Anatoecus dentatus (Scopoli, 1763)
(from Clay and Hopkins, 1951)

<table>
<thead>
<tr>
<th>Character</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.47</td>
</tr>
<tr>
<td>Head Width</td>
<td>.43</td>
</tr>
<tr>
<td>Prothorax</td>
<td>.28</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.37</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.72</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.60</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.45</td>
</tr>
</tbody>
</table>

Anatoecus icterodes (Nitzsch, 1818)

Pediculus mergi Guerin, 1818 (nec J. C. Fabricius, 1781).
Type host: Mergus serrator Linnaeus--Red-breasted Merganser.
Other New England hosts:
Domestic Goose
Anas platyrhynchos Linnaeus--Mallard.
Spatula clypeata (Linnaeus)--Shoveler.
Aythya affinis (Eyton)--Lesser Scaup.
Clangula hyemalis (Linnaeus)--Oldsquaw.
Somateria mollissima (Linnaeus)--Common Eider.
Mergus merganser Linnaeus--Common Merganser.

In the male of this species the "effractor" is absent (fig. 26a).

Emerson (1964) states that, "the question of whether or not Anatoecus
Icterodes is a dimorphic form of Anatoecus dentatus has not been settled satisfactorily."

Measurements: Anatoecus icterodes (Nitzsch, 1818)
(from Clay and Hopkins, 1960)

<table>
<thead>
<tr>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.43</td>
</tr>
<tr>
<td>Head Width</td>
<td>.40</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.27</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.35</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.59</td>
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<tr>
<td>Abdomen Width</td>
<td>.61</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.29</td>
</tr>
</tbody>
</table>

From all of the above material, especially the host list for these two species of Mallophaga, it is obvious that a list of material examined would add little to what is already known about this genus. It is sufficient to state that any species of Anseriformes in New England is a potential host for both of these species of Anatoecus.
AQUANIRMUS

Type species: *Degeeriella runcinata* (Nitzsch, 1866).

Moderately elongate Philopteridae, typically parasitic on grebes. Darkly to moderately pigmented. Size of male 1.3-1.8 mm. Size of female 2.1-2.6 mm. Pre- and post-marginal carina separate, ventral carina heavily sclerotized, continuous with premarginal carina and extending posteriorly to anterior articulation of mandible. Clypeus divided medially. Dorsal anterior plate pentagonal with narrow anterior hyaline margin. Tergites divided medially except for terminal segments. Sternites III-VI divided medially. Sternite VIII of female with two transverse rows of setae on posterior margin. Male genitalia relatively simple, symmetrical, parameres not articulated and with relatively simple mesosome.
Aquanirmus bucomfishi Edwards, 1965

Type host: Podiceps auritus (Linnaeus)—Horned Grebe.

A small species of Aquanirmus; male average 1.47 mm.; female average 2.45 mm. Carinae of head, thorax and abdomen darkly pigmented. Tergites with narrow bands giving the abdomen a banded appearance. The sclerotized tube of the mesosome nearly twice as long as average (0.40 mm.). This species is confined to Podiceps auritus in North America, being replaced by Aquanirmus columbia (Scopoli, 1763) on Podiceps auritus in Europe.

Material examined: Podiceps auritus (Linnaeus)

Hampton, N. H. Oct. 16, 1965 B. Barrett

Three female Aquanirmus bucomfishi Edwards, 1965, were recovered from this Horned Grebe. (fig. 27).

Peters (1928) and (1936) reports this species from Ohio and Illinois respectively; Brimley (1938) North Carolina; and Edwards (1965) South Carolina, Mississippi, and California.

Aquanirmus emersoni Edwards, 1965

Type host: Podiceps grisegena (Boddaert)—Red-necked Grebe.

A relatively large species of Aquanirmus; male average 1.69 mm, female average 2.40 mm. in length. Lateral lobes of male terminal tergite may extend slightly beyond posterior sternal margin. Chaetotaxy of sternite crowded posteriorly. Male genitalia large, 0.275 mm. long, 0.159 mm. wide. Female sternite VIII with 14 (13-15) setae in outer row, 13 (12-14) in inner row.
I have never collected the Red-necked Grebe and the only records of *Aquanirmus emersoni* are by Edwards (1965) from Massachusetts and Oregon.

*Aquanirmus podilymbus* Edwards, 1965  

Type host: *Podilymbus podiceps* (Linnaeus)--Pied-billed Grebe.

Size moderate; male average 1.59 mm., female average 2.27 mm. Male terminal tergite does not extend beyond the sternal margin. Female sternite VIII with 14 (13-15) setae in outer row, 10 barely distinguishable setae in inner row. Pigmentation general.

Material examined: *Podilymbus podiceps* (Linnaeus).

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>(Examined at N. H. Fish &amp; Game Dept.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 4, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

None of the above collections contained specimens of *Aquanirmus podilymbus*. The only published record of this species in the United States is by Edwards (1965) from South Carolina.
ARDEICOLA

Type species: _Esthiopterum ardeae_ (Linnaeus, 1758)

Head longer than wide, triangular in shape with rounded anterior margin; dorsal anterior plate well developed with small papillae on the anterior half. Internal carinae well developed; eyes well developed; postantennal area rounded or with margins parallel, posterolateral angle rounded; males with basal segment of antenna expanded, segments II, IV, and V normal, lateral anterior margin of segment III laterally produced. Prothorax wider than long, sides parallel or slightly diverging. Pterothorax about as long as wide, lateral margins straight with slight posterior divergence, pustulated setae at the posterolateral angles. Abdomen elongate; tergites I-VII of female separated medially; tergites IV-VII of male entire; spiracles on segments II-VII. Members of this genus have relatively few setae on the abdomen. (fig. 28).

Members of this genus are found on birds of the order Ciconiiformes.

I was unable to collect members of this genus during the course of this study, therefore, the descriptions were taken from Tuff (1963) and from the original descriptions.
Ardeicola botauri (Osborn, 1896)  
Type host: Botaurus lentiginosus (Rackett) -- American Bittern.

Head with dorsal anterior plate rounded, with crescentic papillae; lateral margins straight; coni greatly reduced; third segment of male antenna with a lateral projection; postantennal region slightly curved. Prothorax wider than long; lateral margins narrowing slightly anteriorly; prothorax with very few setae. Pterothorax wider than long; posterolateral margin with a single long seta and a row of three closely grouped submarginal setae. Abdomen widest at segment IV.

Osborn gave no locality for the collection of the species; however, Ohio State University has one of his slides of this species (?) collected at Ames, Iowa. This species has been reported by Peters (1928) Ohio, Wilson (1928) New York, Peters (1936) Alabama and New Hampshire, Procter (1938) Maine, Brimley (1938) North Carolina, and Whitehead (1954) Quebec.

Material examined: Botaurus lentiginosus (Rackett)  
Durham, N. H. Sept. 17, 1964 Coll. ?  
No Locality No Date U. N. H. Coll.

No Mallophaga were found.

Ardeicola cruscula Carriker, 1960a  
Type host: Ardea herodias Linnaeus -- Great Blue Heron.

The largest of the heron infesting Ardeicola. Males with three long submarginal setae on posterior angle of pterothorax and a medium length seta not associated with the above group at the posterolateral
margin. Abdomen elongate, widest at segment IV; pigmentation on tergite I confined to a spot on the lateral margin; tergites II and III with color restricted to a rectangular area on the lateral margin. Female similar to male; antennae filiform. Prothorax and pterothorax as in the male.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.76</td>
<td>.81</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.34</td>
<td>.36</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.49</td>
<td>.51</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.63</td>
<td>1.82</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.59</td>
<td>.68</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.96</td>
<td>3.17</td>
</tr>
</tbody>
</table>

Material examined: *Ardea herodias* Linnaeus

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
</table>

This species of Mallophaga was not collected from these birds.

*Ardeicola gaibagla* Ansari, 1947


Type host: *Bubulcus ibis* Linnaeus—Cattle Egret.
Other New England host:

*Casmerodius albus* (Linnaeus)—Common Egret.

Head long and narrow; dorsal anterior plate bearing about fifty-seven crescentic papillae; temples rounded with narrow, indistinct, yellowish marginal bands; gular plate weak. Prothorax small, lateral margins straight with a small seta at the posterolateral angle. Pterothorax slightly wider than prothorax and bearing four pustulated hairs.
on the posterior margin; sternal plates indistinct. Abdomen elongated, widest at segment V, gradually tapering towards the posterior end.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.66</td>
<td>.70</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.30</td>
<td>.34</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.39</td>
<td>.42</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.65</td>
<td>2.05</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.50</td>
<td>.52</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.81</td>
<td>3.27</td>
</tr>
</tbody>
</table>

I have not collected either of the hosts and have no record of *A. gaibagla* being collected in New England.

*Ardeicola goisagi* Uchida, 1953


Type host: *Nycticorax nycticorax* (Linnaeus)—Black-crowned Night Heron.

Males and females appear morphologically similar to other members of this group. This species is distinguished by the tergal pigmentation in both sexes being limited to a small area on the anterior lateral angle of tergites II-VII.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.69</td>
<td>.75</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.30</td>
<td>.33</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.37</td>
<td>.44</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.56</td>
<td>2.04</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.57</td>
<td>.69</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.69</td>
<td>3.29</td>
</tr>
</tbody>
</table>
Material examined: *Nycticorax nycticorax* (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
</table>

No *Ardeicola goisagi* Uchida, 1953, were found.

There are no published records of this species of mallophagan having been collected in New England.
**BRÜELIA**

Type species: **Brüelia rossittensis** Keler, 1936. (A synonym of **Nirmus brachythorax** Giebel, 1874).

Type species: **Nirmus apiastri** Denny, 1842.

Type species: **Nirmus uncinus** Burmeister, 1838.

Type species: **Painjunirmus pengya** Ansari, 1947.

Type species: **Trahörleiella punjabensis** Ansari, 1947.

Type species: **Docophorus subalbicans** Piaget, 1885. (A synonym of **Docophorus papuanus** Gieb, 1879).

Type species: **Nirmus submarginellus** Nitzsch, 1866. (A synonym of **Nirmus menuraelyrae** Coinde, 1859).

Type species: **Allobrüelia amsel** Eichler, 1951.

Type species: **Turdinirmus merulensis** (Denny, 1842).

Within the genus **Brüelia** can be seen a series of species ranging from those having an entire marginal carina and no dorsal anterior plate to those species having the marginal carina interrupted medially and laterally and having the dorsal anterior plate well developed (Clay, 1951). Head quite large, "thimble shaped", with preantennal region bluntly conic. All known species have the ventral carina of the head interrupted. Antennae filiform and similar in both sexes; trabeculae variable in shape. Temporal lobes evenly expanded laterally. Prothorax small with the lateral margins slightly concave in almost all species.
Pterothorax broader than long, sides diverging and posterior margin evenly rounded. Abdomen elongate-oval, in many species distinctly marked by well sclerotized areas. Abdominal tergal plates of female, usually III-IV, separated medially. Male genitalia with a large basal plate and short, blunt parameres.
Bru\textit{elia argula} (Burmeister, 1838)
Type host: \textit{Corvus corax} Linnaeus--Common Raven.

I have no data on this species of Mallophaga. The Common Raven is a casual visitor in New England and not often collected.

Material examined: \textit{Corvus corax} Linnaeus.
Stratton, Maine Sept. 6, 1965 H. Tyler
\textit{B. argula} was not found.

Bru\textit{elia cedrorum} (Piaget, 1880)
\textit{Nirmus brachythorax cedrorum} Piaget, 1880. Les Pediculines: 151, pl. 12, fig. 2.
Type host: \textit{Bombycilla cedrorum} Vieillot--Cedar Waxwing.

I have no information concerning this species of Bru\textit{elia}.

Material examined: \textit{Bombycilla cedrorum} Vieillot

The Madbury collection yielded 1 male and 1 female \textit{Bru\textit{elia}} which may be referable to this species.

\textit{Bru\textit{elia clayae}} Ansari, 1956a
Type host: \textit{Cyanocitta cristata} (Linnaeus)--Blue Jay.

Head triangular; preantennal marginal carina interrupted medially; ventral carina interrupted medially and continuous with the premarginal carina. Temple with one long seta. Prothorax short with one long seta in each posterolateral angle. Pterothorax with six long setae on each side on the posterodorsal margin. Abdomen elliptical. Tergites II-VIII
with 2 central short setae. Male genitalia well developed.

Material examined: **Cyanocitta cristata** (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumney, N.H.</td>
<td>Mar. 25, 1963</td>
<td>Coll. ?</td>
<td></td>
</tr>
<tr>
<td>Amherst, N.H.</td>
<td>Apr. 1, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Sandwich, N.H.</td>
<td>May 6, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Farmington, N.H.</td>
<td>May 8, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>June 4, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Lee, N.H.</td>
<td>Aug. 15, 1965</td>
<td>R. L. Blickle</td>
<td></td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>Aug. 16, 1965</td>
<td>R. M. Reeves</td>
<td></td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>Aug. 18, 1965</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Bedford, N.H.</td>
<td>Oct. 6, 1965</td>
<td>D. W. Sutherland</td>
<td></td>
</tr>
</tbody>
</table>

The following were positive for *B. clayae*.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N.H.</td>
<td>Aug. 20, 1964</td>
<td>(2 birds)</td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>Aug. 24, 1964</td>
<td>(2 birds)</td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>Sept. 15, 1964</td>
<td>(2 birds)</td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>Sept. 30, 1964</td>
<td>(1 bird)</td>
</tr>
<tr>
<td>Durham, N.H.</td>
<td>Oct. 5, 1964</td>
<td></td>
</tr>
</tbody>
</table>

**Brueelia domestica** (Kellogg and Chapman, 1899)


Type host: *Hirundo rustica* Linnaeus--Barn Swallow.

This specimen, according to the authors, was supposed to be closely related to *N. longus*, differing in having three instead of six lateral metathoracic setae; a more elongate head; and the median uncolored longitudinal line of the abdomen. Carriker (1957) says that the "type" of *domesticus* is a typical *Brueelia*, but of an entirely different form from the figure and specimen of *longus*. He states (1963a) that the specimen marked as the type of *domesticus* is not the specimen described, and the name must be disregarded.
Material examined: *Hirundo rustica* Linnaeus.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albany, N. H.</td>
<td>May 15, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>June 4, 1965</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Portsmouth, N. H.</td>
<td>June 23, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

*Brüelia domestica* was not found.

Material examined: Slides.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingston, N. H.</td>
<td>July 5, 1962</td>
<td>A. Moorehouse (1?)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(U. R. I. Coll.)</td>
</tr>
</tbody>
</table>

*Brüelia iliaca brevicolor* Ansari, 1956

Type host: *Turdus migratorius* Linnaeus—Robin.

A delicate and feebly sclerotized species; lateral margins of clypeal region moderately convex; marginal carina narrow, indented medially. Pterothorax a little less than twice as wide as long. Tergite V and VIII with one, VI and VII with two tergolateral setae on each side.

Peters (1928) reports this species from Ohio; Peters (1936) from North Carolina; and Ansari (1956) from Arizona.

Material examined:

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Hopkinton, N. H.</td>
<td>Apr. 24, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Derry, N. H.</td>
<td>May 7, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Epping, N. H.</td>
<td>May 13, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Dover, N. H.</td>
<td>Sept. 18, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Oct. 6, 1964</td>
<td>J. E. K. (7 birds)</td>
</tr>
<tr>
<td>Plaistow, N. H.</td>
<td>Apr. 23, 1965</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>May 5, 1965</td>
<td>R. M. Reeves</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 29, 1965</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>
B. iliaci brevicolor was not found.

Material examined: Slides.

Durham, N. H. Mar. 29, 1948 E. O. Hooghkirk

One female Brüelia which is probably this species. The specimen was mounted without removing the gut contents, thereby obscuring the chaetotaxy necessary for species identification.

Brüelia imponderabilica Eichler, 1954a

Type host: Lanius excubitor Linnaeus—Northern Shrike.

I have no data on this species of Brüelia and have not collected its host.

Brüelia infrequens (Carriker, 1902)

Nirmus infrequens Carriker, 1902. J. N. Y. Ent. Soc., 10: 220, pl. 20, fig. 3.
Type host: Calcarius lapponicus (Linnaeus)—Lapland Longspur.

Head elongate with V-shaped ocular bands; temples with one long seta and one short bristle on each side. Prothorax small, angles rounded; heavily bordered laterally with blackish brown extending around the posterior border. Pterothorax much wider than prothorax. Abdomen with sides of posterior half nearly parallel to segment VIII. Material from this bird appears to be quite scarce. I have Carriker's (1902) published record of a collection of one female and one immature female from Colorado as the only record from the United States.

Material examined: Calcarius lapponicus (Linnaeus).

None.
Measurements: *Bruelia infrequens* (Carriker, 1902)
(from Carriker, 1902)

<table>
<thead>
<tr>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
</tr>
<tr>
<td>Head Width</td>
</tr>
<tr>
<td>Abdomen Width</td>
</tr>
<tr>
<td>Total Length</td>
</tr>
</tbody>
</table>

*Bruelia interposita* (Kellogg, 1899)


Type host: *Dendroica petechia* (Linnaeus)—Yellow Warbler.

Lateral margins of head weakly convex: trabeculae extend to the first antennal segment and are uncolored. Temples with a single long seta; occipital margin bare, very flatly convex; forehead and temporal margins narrowly bordered with dark brown. Prothorax short and wide with one long seta in each posterolateral angle. Pterothorax short, lateral margins dark brown; six or seven long setae on the posterodorsal margin on either side of the midline. Abdomen narrow with rather broad dark brown lateral bands.

According to Carriker (1957) this specimen was collected in Panama. I have found no records of its collection in the United States and have not collected the Yellow Warbler during the course of this study.

*Bruelia limbata* (Burmeister, 1838)


Type-host: *Loxia curvirostra* Linnaeus—Red Crossbill.

I have no description of this species of *Bruelia*. 
Material examined: *Loxia curvirostra* Linneaus.

None.

**Brueelia longifrons** Carriker, 1956

Type host: *Parus atricapillus* (Linnaeus)—Black-capped Chickadee.

A large species, the female measuring 1.82 mm. in length. Pre-antennal region very long with flatly convex sides; the buccal canal narrows abruptly at the posterior edge of the small, semilunar anterior plate, then gradually narrows to a very constricted opening into the long narrow buccal cavity; gular plate extends beyond occipital margin. Pterothorax with straight sides, diverging; thoracic carinae deeply colored. Abdomen with narrow pleurites.

Described by Carriker (1956) from a single female collected in Kansas. It is the only published record of this species. I have not collected this species in 25 examinations of the Black-capped Chickadee.

**Brueelia nebulosa** (Burmeister, 1838)


Type host: *Sturnus vulgaris* Linnaeus—Starling.

A lightly sclerotized species. Premarginal carina interrupted medially; temples rounded with one long seta on each side; trabeculae short, transparent, not reaching to the end of the first antennal segment, occipital margin almost straight. Prothorax with sides curved, a short seta in each posterolateral angle. Pterothorax with five long
setae on each side on the posterodorsal margin.

This is a very common parasite of the starling. I have examined 56 starlings from various localities in New England and have found *Bruèelia nebulosa* on 33 of these birds.

*Bruèelia nivalis* (Giebel, 1874)

*Nirmus nivalis* Giebel, 1874. *Insecta Epizoa*: 140.  
Type host: *Plectrophenax nivalis* (Linnaeus)—Snow Bunting.

I have no information concerning this species of Mallophaga.

Material examined: *Plectrophenax nivalis* (Linnaeus)


*B. nivalis* was not found.

*Bruèelia ornatissima* (Giebel, 1874)

*Nirmus ornatissimus* Giebel, 1874. *Insecta Epizoa*: 144.  
Type host: *Agelaius phoeniceus* (Linnaeus)—Red-winged Blackbird.

Head truncate, very slightly convex in front with two or three very short indistinct marginal hairs; trabeculae small and weak; temporal margin with two bristles and a weak hair; antennae with segment I colorless, others dark brown; occipital margin straight. Prothorax with flatly rounded sides and rounded posterior angles each with one small seta; anterior angles with a dark brown blotch. Pterothorax with five weak setae in each lateral fourth of the posterior margin; small black linear blotches in the anterior angles. Abdomen elongate with posterior angles of segments projecting slightly, pointing backward and each with two setae; lateral bands narrow, black; large median brown blotches on segments I-VII nearly crossed by a transverse linear colorless space
Material examined: *Agelaius phoeniceus* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 3, 1963</td>
<td>Coll. ?</td>
<td></td>
</tr>
<tr>
<td>Brentwood, N. H.</td>
<td>Apr. 20, 1965</td>
<td>A. H. Mason</td>
<td></td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>June 7, 1965</td>
<td>D. Holman</td>
<td></td>
</tr>
</tbody>
</table>

*B. ornatissima* was not found.

Although I did not find *Brüelia ornatissima* on the Red-winged, I found it to be a common parasite of the Grackle, *Quiscalus quiscula* (Linnaeus). I have made 40 examinations of this bird all from New Hampshire. Collections yielding *B. ornatissima* are listed below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 2, 1963</td>
<td>Coll. ?</td>
<td></td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 3, 1963</td>
<td>Coll. ?</td>
<td></td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>July 22, 1965</td>
<td>J. E. K.</td>
<td></td>
</tr>
</tbody>
</table>

The number of individual Mallophaga on a single bird ranged from 1-136.

**Brüelia pallidula** (Harrison, 1916)


Type host: *Pheucticus ludovicianus* (Linnaeus)--Rose-breasted Grosbeak.

Head bluntly conical in front; lightly sclerotized along premarginal carinae and mandibles; trabeculae pointed, transparent, reaching to the end of the first antennal segment; temples with a single seta. Prothorax small; pterothorax with six long setae on each side arranged along the posterodorsal margin. Legs colorless. Abdomen colorless except for the light brown pleurites.
Material examined:  *Pheucticus ludovicianus* (Linnaeus)

Durham, N. H.  May 12, 1962  Coll. ?

*Bruelia pallidula* was not found.

Material examined: Slides.

Durham, N. H.  1948  E. O. Hooghkirk (1 ♀)
Augusta, Maine  May ?, 1964  A. E. B. (4 imm.)

*Bruelia picturata* (Osborn, 1896)


Type host: *Sturnella magna* (Linnaeus)—Eastern Meadowlark.

Head elongate; premarginal carinae dark except at apex; temporal carinae narrow; antennae with joints subequal, annulate. Posterior margin of prothorax black; pterothorax with broad, black band widened at sides to form submargin. Abdomen with broad, black margin on segments I-VII, broad ventral median bands on segments I-V, faint on I-II, not separated by a median clear space, but having a transverse light band.

Osborn (1896) records this species from Iowa; Geist (1931) Ohio; Thompson (1934) Quebec; Peters (1936) Maryland and South Carolina; and Whitehead (1954) Quebec.

Material examined: *Sturnella magna* (Linnaeus)

Walpole, N. H.  Aug. 21, 1964  J. E. K.

*Bruelia picturata* was not found.

*Bruelia rotundata* (Osborn, 1896)


Type host: *Corvus brachyrhynchos* Brehm—Common Crow.
Head wider than long; premarginal carinæ dark modified medially, with anterior hyaline margin; antennæ slightly dimorphic, the male first antennal segment more robust than in the female. Tergal plates II-VIII approximate, IX entire.

Osborn (1896) records this species from Iowa; Peters (1928) Ohio; Peters (1936) Maryland and New York; Emerson (1940) Oklahoma; Brown and Wilk (1944) Alberta; Stirrett (1952) Ontario; Whitehead (1954) Quebec; and Ansari (1957) California and Kansas.

Measurements: *Brueelia rotundata* (Osborn, 1896)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.46</td>
<td>.52</td>
</tr>
<tr>
<td>Head Width</td>
<td>.55</td>
<td>.64</td>
</tr>
<tr>
<td>Prothorax</td>
<td>.36</td>
<td>.37</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.60</td>
<td>.66</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.91</td>
<td>1.35</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.81</td>
<td>.87</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.77</td>
<td>2.25</td>
</tr>
</tbody>
</table>

Material examined: *Corvus brachyrhynchos* Brehm.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portsmouth, N. H.</td>
<td>July 2, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Wakefield, N. H.</td>
<td>Sept. 15, 1964</td>
<td>G. L. Walker (2 birds)</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 17, 1964</td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

*Brueelia rotundata* was collected from a crow, September 14, 1964, Wakefield, New Hampshire, and from the U. N. H. bird skin collection.
Material examined: Slides.

Middletown, Conn. Nov. 6, 1925 O. L. Austin, Jr. (USNM Slide)


Bruelia subis (Carriker, 1963a)
Type host: Progne subis (Linnaeus)—Purple Martin.

Dorsal preantennal carinae not broken near frons; inner sternal carinae very wide and extending back beyond ends of dorsal carinae, and forward to anterior plate, where they are fused with the dorsal carinae. Abdominal chaetotaxy long.

Material examined: Progne subis (Linnaeus)
None.

Bruelia subtilis (Nitzsch, 1874)
Type host: Passer domesticus (Linnaeus)—House Sparrow or Passer montanus (Linnaeus)—European Tree Sparrow.

I have no description of this species of Mallophaga.

Wilson (1958) collected B. subtilis on 8 of 64 House Sparrows in Kentucky.
Material examined: *Passer domesticus* (Linnaeus)

- Durham, N. H. Nov. 12, 1962 Coll. ?
- Durham, N. H. Aug. 18, 1965 G. L. Walker

None of the 43 collections yielded *B. subtilis*.

**Brüelia tenuis** (Burmeister, 1838)


Type host: *Riparia riparia* (Linnaeus)—Bank Swallow.

I have no data on this species of *Brüelia* and have been unable to collect the Bank Swallow, *Riparia riparia*.

**Brüelia vulgata** (Kellogg, 1896)


Type host: *Junco hyemalis* (Linnaeus)—Slate-colored Junco.

Head conical, with narrow parabolic front; trabeculae very small and colorless; temporal margin with one long hair; occipital margin straight; entire head narrowly bordered along lateral margins with dark brown, turning inward at antennal fossae. Prothorax narrow, quadrangular, with a long seta in each posterolateral angle; narrow lateral blackish border; pterothorax almost as wide as head; six setae along each lateral third of posterodorsal margin. Abdomen elongate, slender, with one weak seta in each posterior angle; distinct dark brown lateral bands and paler broad, rectangular transverse blotches.
Material examined; **Junco hyemalis** (Linnaeus)

Durham, N. H.  
Mar. 30, 1964  J. E. K.
Durham, N. H.  
Nov. 17, 1965  D. Adams
Durham, N. H.  
Nov. 28, 1965  P. Sawyer

**Bruella vulgata** was not found.

Material examined; Slides.

Bar Harbor, Maine  
Mar. 27, 1938  M. Sullivan
Durham, N. H.  
Mar. 6, 1948  E. L. Hooghkirk
Milton, Mass.  
Dec. 11, 1948  R. M. Hinchmon  
(M. C. Z. Coll.)

**Bruella zeropunctata zeropunctata** Ansari, 1957

**Bruella longifrons longifrons** Ansari, 1956 (nec Carriker, 1956).

*Biologia*, 2: 121, figs. 43-47.

**Bruella zeropunctata zeropunctata** Ansari, 1957. Pakistan J. 

Health, 5: 270 (nn for **B. longifrons longifrons** Ansari, 1956).

Type host: **Hylocichla ustulata** (Nuttall)--Swainson's Thrush.

Head about as wide as long approaching conical form; clypeal region more or less flat in front and almost straight laterally; temples moderately dilated with a single long seta; gular plate well developed.

Prothorax with one long seta in each posterolateral angle. Pterothorax with one short and one long seta in each posterolateral angle; 5 long setae on each side along the posterodorsal margin. Abdominal tergites II-VIII with one tergocentral seta; tergite IX with six small irregular setae.

Ansari (1956) reports this species from Wisconsin.

Material examined; **Hylocichla ustulata** (Nuttall)

No Locality  
No Date  Coll. ? (2 birds)
Durham, N. H.  
No Date  Coll. ?
Albany, N. H.  
Aug. 4, 1964  J. E. K.

**B. zeropunctata zeropunctata** was not found.
There is a subspecies of *B. zeropunctata*, *Bruelia zeropunctata antiqua* Ansari, 1956, found on the Hermit Thrush, *Hylocichla guttata* (Pallas).

Material examined: *Hylocichla guttata* (Pallas)

- **Bartlett, N. H.** May 23, 1964 J. E. K. (2 birds)
- **Albany, N. H.** Aug. 4, 1964 J. E. K.
- **Durham, N. H.** Sept. 21, 1964 J. E. K.
- **Dover, N. H.** Sept. 24, 1964 J. E. K.
- **Durham, N. H.** Apr. 30, 1965 J. E. K.
- **Jefferson, N. H.** Summer, 1965 D. J. Lennox

One of the two birds collected on May 23, 1964, yielded 2 female and 5 immature *B. zeropunctata antiqua*. 
Head circumfasciate with an obvious semilunar chitinous ridge anterior to the mandibles. Antennae filiform and similar in the two sexes; clavi prominent and short; temporal lobes acutely angled, each with two long setae at the posterolateral angle. Posterior margin of occiput concave. Prothorax narrow. Dorsal posterior margin of the pterothorax projects over the abdomen. Abdomen of both sexes broad, oval; posterolateral angle of each segment with two prominent setae. The most important generic character is the bell-shaped head, to which the generic name refers. Lice of this genus are ectoparasitic on birds of the order Columbiformes.
Campanulotes bidentatus compar (Burmeister, 1838)


Type host: Domestic Pigeon.

This is the only species of the genus known in North America. The

generic description and fig. 30 will serve to identify this species. It

has been reported by Wilson (1928) from New York, Peters (1928) Ohio,

Emerson (1940) Oklahoma, Brimley (1942) North Carolina, Brown and Wilk


Material examined: Domestic Pigeon

Concord, N. H. Feb. 19, 1964 Coll. ?
Exeter, N. H. Mar. 16, 1964 F. Kruger
Durham, N. H. Sept. 21, 1965 J. E. K.

The Concord, New Hampshire, and the Durham, New Hampshire,

September 30, 1965 material yielded specimens of this species.

Material examined: Slides.

South Hadley, Mass. No Date E. Boyd
Bar Harbor, Maine Nov. 7, 1939 A. E. B.
Amherst, Mass. Feb. 29, 1940 M. E. Smith
(USNM Slide)
Portland, Maine Feb. 10, 1958 R. L. Blickle
W. J. Morse

Type species: *Degeeriella complexiva* (Kellogg and Chapman, 1899) (A synonym of *Nirmus zonarius* Nitzsch, 1866).

Head with broad hyaline margin arising from clypeal suture; clypeal and internal bands fusing at their anterior ends; clypeal signature large. Dorsal antennal bands passing inwards and downwards to form a narrow suture on each side of the preantennal region. Heavily sclerotized transverse antennal band across head at the level of the mandibles; dorsal and ventral occipital bands present. Pterothorax short with lateral margins not divergent. Abdomen with segment I small; paratergal plates without elongated re-entrant heads and bearing anterior and posterior inwardly directed processes; the posterior process continued across tergal plate as a thickened bar, giving the characteristic appearance to the abdomen. Tergal plates, except segment I, entire and transversely continuous. Male abdomen with segment IX much reduced, not protruding and scarcely demarcated from segment VIII. (fig. 31).
Carduiceps meinertzhageni Timmermann, 1954a


Type host: *Erolia alpina* (Linnaeus)—Dunlin.

Other New England host:
*Erolia maratima* (Brünnich)—Purple Sandpiper.

Male genitalia characterized by the long basal plate, which does not extend as far forward as the penis. The endomeral complex is inverted, narrow and bottle shaped; parameres short, broad and strongly curved. Female similar to male but larger.

Measurements: *C. meinertzhageni* ex. *Erolia alpina*

<table>
<thead>
<tr>
<th></th>
<th>♂ *</th>
<th>♀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.32 - .35</td>
<td>.36</td>
</tr>
<tr>
<td>Head Width</td>
<td>.26 - .28</td>
<td>.30</td>
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<tr>
<td>Prothorax Width</td>
<td>-</td>
<td>.16</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>-</td>
<td>.24</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>-</td>
<td>1.12</td>
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<tr>
<td>Abdomen Width</td>
<td>-</td>
<td>.39</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.24 - 1.31</td>
<td>1.71</td>
</tr>
</tbody>
</table>

* From Timmermann (1954a) (Range)

Material examined: *Erolia alpina* (Linnaeus)


I was able to recover only 3 female *C. meinertzhageni* from these two birds.
Measurements: *C. meinertzhageni* ex. *Erolia maritima*

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Female 1</th>
<th>Female 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.35</td>
<td>.37</td>
</tr>
<tr>
<td>Head Width</td>
<td>.28</td>
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<tr>
<td>Prothorax Width</td>
<td>.15</td>
<td>.15</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.21</td>
<td>.22</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.93</td>
<td>1.06</td>
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<tr>
<td>Abdomen Width</td>
<td>.40</td>
<td>.40</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.50</td>
<td>1.68</td>
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</tbody>
</table>

Material examined: *Erolia maritima* (Br"unnich)


I collected two female *C. meinertzhageni* from this bird.

*Carduiceps zonarius* (Nitzsch, 1866)


*Carduiceps pusillus* Carriker, 1956. Florida Ent., 39: 125, figs. 70a, 71 and 72.

Type host: *Erolia minuta* (Leisler).

New England hosts:

*Calidris canutus* (Linnaeus)—Knot.

*Erolia melanotos* (Vieillot)—Pectoral Sandpiper.

*Erolia fusccollis* (Vieillot)—White-rumped Sandpiper.

*Erolia bairdii* (Coues)—Baird's Sandpiper.

*Erolia minutilla* (Vieillot)—Least Sandpiper.

*Ereunetes pusillus* (Linnaeus)—Semipalmated Sandpiper.

*Crocethia alba* (Pallas)—Sanderling.

This species has been reported by Kellogg and Chapman (1899) from the Sanderling and the Least Sandpiper in California, Peters (1928) reports it from Ohio on Baird's Sandpiper, Pectoral Sandpiper, Least Sandpiper, Semipalmated Sandpiper and Sanderling. Geist (1931) reports
it on the White-rumped Sandpiper in Ohio, Twinn (1935) in Manitoba on the Semipalmated Sandpiper, Peters (1936) records this species on the Knot, Florida; Pectoral Sandpiper, Virginia; White-rumped Sandpiper, Massachusetts, Ohio; Baird’s Sandpiper, Massachusetts, Ohio; Least Sandpiper, Washington, D. C., South Carolina; Semipalmated Sandpiper, South Carolina; Sanderling, Florida, Illinois, Massachusetts, New Hampshire, Ohio, South Carolina and Virginia. Procter (1938) on the Sanderling in Maine, Brimley (1938) on the Pectoral Sandpiper, White-rumped Sandpiper and Sanderling in North Carolina, Stirrett (1952) on the Pectoral Sandpiper and Least Sandpiper in Ontario, and Carriker (1956) on the White-rumped Sandpiper and Semipalmated Sandpiper in Kansas.

Material examined: *Calidris canutus* (Linnaeus)

Phippsburg, Maine Sept. 1, 1965 H. Tyler

*C. zonarius* was not found.

Material examined: Slides

Seabrook, N. H. Sept. 16, 1935 L. R. Nelson (USNM Slide)

Material examined: *Erolia melanotos* (Vieillot)

Brunswick, Maine Sept. 13, 1965 H. Tyler

*C. zonarius* was found (2 males, 4 females).

Material examined: *Erolia fuscicollis* (Vieillot)

None.

Material examined: Slides

Material examined: **Erolia bairdii** (Coues)

None.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
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</thead>
<tbody>
<tr>
<td>Ipswich, Mass.</td>
<td>Sept. 16, 1931</td>
<td>USNM Slide</td>
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</table>

Material examined: **Erolia minutilla** (Vieillot)

<table>
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<th>Date</th>
<th>Collection</th>
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</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

*C. zonarius* was not found.

Material examined: **Ereunetes pusillus** (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

Two male and four female *Carduiceps zonarius* were collected from the two Hampton, New Hampshire, birds.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seabrook, N. H.</td>
<td>Sept. 29, 1936</td>
<td>USNM Slide</td>
</tr>
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</table>

Material examined: **Crocethia alba** (Pallas)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
</table>

*C. zonarius* was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nahant, Mass.</td>
<td>Sept. 24, 1914</td>
<td>USNM Slide</td>
</tr>
<tr>
<td>Charlestown, R. I.</td>
<td>July 24, 1961</td>
<td>U. R. I. Coll. (1♀)</td>
</tr>
</tbody>
</table>
Carduiceps sp.

I have collected a single female Carduiceps sp. from Limosa haemastica (Linnaeus)—Hudsonian Godwit, Plum Island, Essex County, Massachusetts, October 31, 1964.

Measurements:

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Head Length</td>
<td>.45</td>
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<tr>
<td>Head Width</td>
<td>.40</td>
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<tr>
<td>Prothorax Width</td>
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<td>.30</td>
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<tr>
<td>Abdomen Length</td>
<td>1.20</td>
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<tr>
<td>Abdomen Width</td>
<td>.54</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.95</td>
</tr>
</tbody>
</table>
CHELOPISTES

Type species: Rhopaloceras stylifer (Nitzsch, 1818) (A synonym of Pediculus meleagridis Linnaeus, 1758).

Type species: Gonioedes meleagridis (Linnaeus, 1758).

Type species: Trichomedea setosa Carriker, 1945a.

Clay (1941) considers the form of the male clavus as the most constant and typical generic character. Male clavi transparent and consist of a basal portion prolonged distally into a fine point; in the female the clavi are normal. In known species the antennae are sexually dimorphic, the male having the distal pre-axial angle of the third segment produced. Pterothorax quite large with straight divergent lateral margins and a central sternal plate bearing hairs. Abdomen elongated and somewhat pointed posteriorly with segment I (true segment II) small in both sexes. Segments VIII and IX (true segments IX and X) of male are fused and elongated in an anteroposterior plane. In this genus the genital opening is ventral. Paratergal plates well marked with complicated re-entrant heads. (fig. 32).
Chelopistes meleagris (Linnaeus, 1758)


(= for P. meleagris Schrank, 1781).


44: 47.

Type host: Meleagris gallopavo Linnaeus--Turkey.

This is the only species of the genus found in New England. It is
easily distinguished from all other species of the genus by the temples
in both sexes being greatly prolonged distally. It has been reported by
Wilson (1928) from New York, Peters (1928) Ohio, Brimley (1938) North
Carolina, Emerson (1940) Oklahoma, and by Brown and Wilk (1944) from
Alberta.

I have been unable to collect this species.
COLUMBICOLA

Type species: Pediculus columbae Linnaeus, 1758.

Type species: Soricella streptopeliae Clay and Meinertzhagen, 1937.

Type species: Phagopterus columbae Freire and Duarte, 1944 (A synonym of Pediculus columbae Linnaeus, 1758).

Head long and slender; forehead with sides almost straight; clypeal suture present; clypeus rounded and bearing above two pairs of spines, the front pair being flattened and porrect and the hind pair being recurved. Trabeculae small; antennae showing sexual dimorphism; those of male with the third segment bearing an appendage; postantenal region of head slender, temples poorly developed and rounded. Pterothorax rectangular and bearing a tuft of long setae on each posterolateral angle. Abdomen very slender with heavily sclerotized pleural plates; genital armature of male with broad basal plate, almost straight, free parameres and poorly developed endomer es.

Mallophaga of this genus parasitize birds of the order Columbiformes.
Columbicola columbae (Linnaeus, 1758)

Type host: Domestic Pigeon.

This may well be the most common mallophagan found in any collection and it is certainly the most thoroughly studied from a physiological point of view. Osborn (1896) states that it is not strange that it attracted the attention of early naturalists, as it occurs in wonderful abundance on almost every pigeon that may be examined, and its striking appearance, due to the extreme slenderness of the body, would at once catch the eye of the observer (fig. 33).

Material examined: Domestic Pigeon

Durham, N. H. Sept. 21, 1965 J. E. K.

Both collections positive for this species.

Material examined: Slides

Wellesley, Mass. May 6, 1892 M. C. Z. Coll.
Massachusetts Jan. 29, 1909 M. C. Z. Coll.
Bar Harbor, Maine Sept. 7, 1939 A. E. B.
Amherst, Mass. Feb. 29, 1940 M. E. Smith
Bar Harbor, Maine Feb. 10, 1958 R. L. Blickle

Columbicola macrourae (Wilson, 1941)

Esthiopterum macrourae Wilson, 1941. J. Parasit., 27: 262, figs. 5-8.
Type host: Zenaidura macroura (Linnaeus)—Mourning Dove.

Normally only one species of Columbicola is found upon a single host species. Columbicola macrourae appears to be restricted to the eastern part of the range of Zenaidura macroura, and is apparently
replaced in the western part of the host range by *Columbicola baculoides* (Paine, 1912). This is one of the few examples of geographical dis­istribution to be found in the Mallophaga. In almost all other cases mallophagan distribution is the same as host distribution.

Material examined: *Zenaidura macroura* (Linnaeus).

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newington, N. H.</td>
<td>Aug. 30, 1965</td>
<td>B. Smith</td>
</tr>
</tbody>
</table>

No Mallophaga were found.
CRASPEDONIRMUS

Type species: Docophorus frontatus Nitzsch, 1866 (A synonym of Docophorus colymbinus Denny, 1842).

Type species: Docophorus graviceps Kellogg, 1896 (A synonym of Docophorus colymbinus Denny, 1842).

Head broad, conical with rounded temples and prominent forehead; dorsal anterior plate shield shaped, concave in front, posteriorly with long acuminate tip; trabeculae small; antennae short, filiform and similar in the two sexes; lateral margins of head almost straight; posterior margin almost straight. Main feature of the head is its division into two by a dorsal line running transversely just posterior to the base of the antennae. Prothorax small; pterothorax larger, but neither as wide as the head at its widest point. Abdomen slightly more than one and a half times as long as wide; fourth segment broadest; transverse bands continuous; pleurites strongly pigmented and sclerotized; tergites separated from the pleurites by a narrow clear area, almost rectangular; terminal segments of female bilobed; male genitalia small, parameres hooked at distal end. Members of this genus are parasitic on the order Gaviiformes.
Craspedonirmus colymbinus (Denny, 1842)


Docophorus bisetosus Piaget, 1885. Les Pediculines, Supplement: 17, pl. 2, fig. 6.


Type host: Gavia stellata (Pontoppidan)—Red-throated Loon.

The only constant morphological difference between this species and the following is that C. colymbinus possesses at least four long setae on abdominal sternites III-VII, while C. immer (see below) possesses two long setae on abdominal sternites III-VII (fig. 34).

Kellogg (1896) reported this species from California, and Thompson (1940) reports examining this species from a diver collected in North American waters.

Material examined: Gavia stellata (Pontoppidan)

Hampton, N. H. Oct. 25, 1965 B. Barrett

C. colymbinus was not found.

Craspedonirmus immer Emerson, 1955a


Type host: Gavia immer (Brünnich)—Common Loon.

Peters (1936) reports this species from New Hampshire; Whitehead (1954) from Quebec and Emerson (1955a) described this species from a holotype male and an allotype female collected at Boston, Massachusetts, two females from California, one male and one female from Washington, D. C., two females and one male from Pennsylvania, all in the British Museum. He also reports 23 females and 2 males from Isles of Shoals, New
Hampshire, in the USNM.

Material examined: **Gavia immer** (Brünnich)


*C. immer* was not found.

Material examined: Slides

- Isles of Shoals, N. H. June 4, 1934 L. R. Nelson (M. C. Z. Coll.)

The M. C. Z. Collections contains 3 female paratypes of

**Crasedonirmus immer** Emerson, 1955.
CRASPEDORRHYNCHUS

Type species: *Docophorus platystomus* Burmeister, 1838.

**Falcoeous** Clay and Meinertzhagen, 1938. Entomologist, 71: 275.
Type species: *Philopterus aquilinus* (Denny, 1842).

Head large with hyaline margin arising at the level of the clypeal suture. Dorsal anterior plate large and distinct; clypeal suture prolonged inward on the dorsal surface of each side and passing down the median line of the head as a narrow suture to the level of the antennal fossae. Antennal bands of the head terminating in a point some distance beyond the anterior margin of the dorsal anterior plate. Trabeculae large. Antennae filiform and similar in the two sexes. Abdomen short and rounded with tergal plates I-VII widely separated medially in both males and females. Posterior margin of terminal abdominal segment rounded in males, emarginate in females.

Members of this genus are parasitic on birds of the order Falconiformes excluding the family Falconidae.
Craspedorrhynchus americanus Emerson, 1960


Type host: Buteo jamaicensis (Gmelin)—Red-tailed Hawk.

In the males there are 14 or fewer long setae on the posterior margin of the pterothorax; abdominal sternite VI with a sparse row of setae; abdominal tergite II with more than 14 long setae and abdominal tergite VIII with eight long setae. The females with the posterior margin of the pterothorax with 12 long setae; the posterior margin of the vulva with 10 medium length setae and the posterior margin of tergite VIII with 14 long setae.


Material examined: Buteo jamaicensis (Gmelin)

None.

Material examined: Slides

Winchester, N. H. Sept. 25, 1933 L. R. Nelson
USNM Slide)
Lincoln, Maine Oct. 28, 1935 W. J. Clayton
(7 9, 1 9)
Lincoln, Maine Oct. 24, 1940 W. J. Clayton
(10 9, 5 9)

Craspedorrhynchus aquilinus (Denny, 1842)


Type host: Aquila chrysaetos (Linnaeus)—Golden Eagle.
The Golden Eagle is not a common New England bird but I have seen a collection of *Craspedorrhynchus aquilinus* collected from this bird in New Hampshire and have figured this species (fig. 35) of Mallophaga.

Material examined: *Aquila chrysaetos* (Linnaeus)

None.

Material examined: Slides

Goffstown, N. H. Oct. 23, 1961 Lacailaide

Two male, two female, and nine immature *C. aquilinus*.

*Crasedorrhynchus buteonis* (Packard, 1870)

*Docophorus buteonis* Packard, 1870. Amer. Nat., 4: 93, pl. 1, fig. 3.

Type host: *Buteo lineatus* (Gmelin)—Red-shouldered Hawk.

In the males there are four long setae on the thoracic sternal plate between coxae II and III; genital sternal plate with 5 long setae on each side in indentations and median setae on the genital plate are present. The females have the posterior margin of tergite VIII with 12 long setae and the posterior central margin of abdominal sternite III with 20 long setae.

Material examined: *Buteo lineatus* (Gmelin)

Concord, N. H. Sept. 1, 1964 J. E. K.

*C. buteonis* was not found.

Material examined: Slides:

Hanover, N. H. May 20, 1892 C. M. Weed
Hanover, N. H. May 21, 1892 C. M. Weed (USNM Slide)

The collection of May 20, 1892 in the collection of the Entomology
Department of the University of New Hampshire contains 4 males identified by H. Osborn. He mentions this collection in "Insects Affecting Domestic Animals" (p. 218) and it is mentioned by Kellogg (1899a: 47).

**Craspedorrhynchus dilatatus** (Rudow, 1869)


*Docophorus eurygaster* Giebel, 1874. *Insecta Epizoa*: 69.


Type host: *Buteo lagopus* (Pontoppidan)—Rough-legged Hawk.

As in *C. buteonis* the males of this species have 4 long setae on the thoracic sternal plate between coxae II and III; but the genital sternal plate has 4 long setae on each side instead of 5. The females resemble *C. buteonis* but have the posterior central margin of abdominal sternite III with 14 long setae.

Material examined: *Buteo lagopus* (Pontoppidan)

None.

Material examined: Slides

Winchester, N. H. Jan. 7, 1934 L. R. Nelson

**Craspedorrhynchus haematopous** (Scopoli, 1763)

*Pediculus haematopous* Scopoli, 1763. *Ent. Carniolica*: 381.

*Pediculus strigis* J. C. Fabricius, 1775 (nec Pontoppidan, 1763). *Syst. Ent.*: 806 (nn for *P. haematopous* Scopoli, 1763).


Type host: *Accipiter gentilis* (Linnaeus)—Goshawk.

This species is separated from all other members of the genus by
the presence of 16 or more long setae on the posterior margin of the pterothorax in the male and 20 or more in the female.

Material examined: Accipiter gentilis (Linnaeus)

<table>
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<tr>
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<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stratton, Maine</td>
<td>Sept. 9, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

C. haematopus was not found.

Material examined: Slides

Martha's Vineyard, Mass. Nov. 10, 1926 A. Keneston (B. M. S. Coll.)

Craspedorrhynchus halieti (Osborn, 1896)
Type host: Haliaeetus leucocephalus (Linnaeus)—Bald Eagle.

The males of this species are characterized by having abdominal tergite II with more than 14 long setae and abdominal tergite VIII with 10 long setae. The females have the posterior margin of the pterothorax with 12 long setae and the posterior margin of the vulva with 14 medium length setae.

Peters (1936) reports this species from Alabama and Washington, D. C. and Stirrett (1952) from Ontario.

Material examined: Haliaeetus leucocephalus (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>Date</th>
</tr>
</thead>
</table>

C. halieti was not found.
Craspedorrhynchus subhaematopus Emerson, 1960


Type host: Accipiter cooperii (Bonaparte)—Cooper’s Hawk.

The males have the thoracic sternal plate between coxae II and III with two long setae and pleural plates of abdominal segment IV each with at least 7 long setae. Females with 14 long setae on the posterior margin of the pterothorax and pleural plates of abdominal segment VII each with 16 long setae.

Emerson (1960) reports this species from Maryland, Florida, and Oregon.

Material examined: Accipiter cooperii (Bonaparte)

No Locality No Date U. N. H. Coll.

C. cooperii was not found.

Material examined: Slides

Branford, Conn. No Date Cornell Coll.
CUCLOTOGASTER

Type species: Cuclotogaster laticorpus Carriker, 1936 (A synonym of Lipeurus heterographus Nitzsch, 1866).

Type species: Lipeurus heterographus Nitzsch, 1866.

Head longer than wide; front of head with hyaline margin and dorsal anterior plate lacking; trabeculae minute; antennae of female filiform; antennae of male with first segment enlarged and third segment with an appendage; eye prominent with a long hair; postantennal region only slightly expanded. Prothorax small, sides divergent; pterothorax very much shortened, with sides broadly divergent and posterior margin not angulated; dorsally four patches of long setae on the posterior margin. Abdomen slender to elongate-oval, spiracles present on segments II-VII; lateral angles on female abdominal segments sharp and projecting. Mallophaga of this genus are ectoparasitic on birds of the order Galliformes.
Cuclotogaster heterographus (Nitzsch, 1866)

Type host: Chicken.

This species is known as the "chicken head louse" and has a worldwide distribution. It is common throughout the United States and has been recorded by Wilson (1928) New York, Peters (1928) Ohio, Procter (1938) Maine, Bramley (1938) North Carolina, Emerson (1940) Oklahoma, and Brown and Wilk (1941) reported it on pheasant chicks in Alberta, Canada.

C. heterographus is the only species of the genus found in New England, therefore, the genus description plus fig. 36 will serve for identification of this species.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Jan. 30, 1922</td>
<td>P. R. Lowry</td>
<td>(7 ♂, 11 ♀)</td>
</tr>
<tr>
<td>Lincoln, Maine</td>
<td>Fall, 1940</td>
<td>W. J. Clayton</td>
<td>(3 ♂)</td>
</tr>
<tr>
<td>Danville, N. H.</td>
<td>May 23, 1956</td>
<td>Coll. ?</td>
<td>(5 ♀)</td>
</tr>
</tbody>
</table>
CUCULICOLA

Type species: *Degeeriella laterostris* (Burmeister, 1838)

Head circumfasciate; no lateral indication of clypeal suture, but with a preantennal dorsal curved transverse suture. Clavi small; no occipital bands or signature. Pterothorax showing lateral indication of meso-metathoracic junction; meso- and metasternal hairs present. Abdomen narrow and elongate; segment I small; tergal plates II-VI separated medially; sternal plate central; pleurites narrow with re-entrant heads. Male with segments VIII and IX small, the latter with narrow thickened marginal band. Terminal segment of female with flattened posterior margin.
Cuculicola erythropthalmus Emerson, 1964a


Type host: Coccyzus erythropthalmus (Wilson)—Black-billed Cuckoo.

This is the only species of the genus found thus far on members of the family Cuculidae in New England. The Yellow-billed Cuckoo is a host for a species of this genus also. I have collected 1 male and 3 female Cuculicola sp. from the Yellow-billed Cuckoo but have been unable to recover Cuculicola erythropthalmus Emerson, 1964a, from the Black-billed Cuckoo. The genus description plus figs. 37a and 37b are sufficient to determine this species.
CUCULOECUS

Type species: *Philopterus coccygi* (Osborn, 1896)

Clypeal region with a hyaline margin throughout, which in front is
curved or concave; dorsal anterior plate entire; clypeal bands not
reaching the lateral margins of the head and each bearing dorsally, at
its anterior end, a tuft of three or more long setae. Clavi large.
Antennae similar in the two sexes. Eyes normal with evenly rounded
corneas. Abdomen broad and stout; tergites of female interrupted in
the middle. Genitalia of male with stout parameres and slender basal
plate; endomerres fused into an endomeral plate which usually protrudes
beyond the parameres; penis present, but small and not well developed.
Members of this genus are parasitic on the order Cuculiformes.
Cuculoecus coccygi (Osborn, 1896)


Type host: Coccyzus americanus (Linnaeus)—Yellow-billed Cuckoo.

At the present time, this is the only known species of the genus described from North America. With sufficient collecting a species of this genus should also be recovered from Coccyzus erythrophthalmus (Wilson), the Black-billed Cuckoo.

Material examined: Coccyzus americanus (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
<th>J. E. K.</th>
</tr>
</thead>
</table>

Material examined: Slides

<table>
<thead>
<tr>
<th>Winchester, N. H.</th>
<th>June 26, 1935</th>
<th>L. R. Nelson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(USNM Slide)</td>
</tr>
</tbody>
</table>

The U. N. H. bird skin yielded a single immature C. coccygi (fig. 38).
CUMMINGSIELLA

Type species: Dollabella testudinarius (Denny, 1842) (A synonym of Pediculus ovalis Scopoli, 1763).


Head roughly quadrangular, slightly longer than wide, with the anterior margin truncate and the sides of the forehead somewhat incurved. Dorsal transverse suture at the level of the antennae absent. Trabeculae well developed, short, not extending beyond the level of the first antennal segment. Dorsal anterior plate well developed, broadly oval, evenly rounded in front and somewhat produced posteriorly. Prothorax short, wider than long; pterothorax with lateral margins divergent and posterior margin convex. Abdomen elongate; tergites in both sexes extend across the segments and unite with the pleurites. Parameres of male genitalia slender elongate rods which turn inward in a bend and then pass straight to the distal end; penis a rod-shaped structure with large telomeris on either side.
Cummingsiella ambigua (Burmeister, 1838)

(nn for D. ambiguus Burmeister, 1838).
Docophorus nirmoides Piaget, 1880. Les Pediculines: 104, pl. 9, fig. 2.
Docophorus nirmoides major Waterston, 1912 (nec Kellogg, 1896).
Type host: Capella gallinago (Linnaeus)—Common Snipe.

This is the only species of Cummingsiella found in New England.
The genus description plus fig. 39 will serve to identify this species.
I have found no published records of collections of C. ambigua in the
United States.

Material examined: Capella gallinago (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. ambiguus</td>
<td>was not found.</td>
<td></td>
</tr>
</tbody>
</table>
DEGEERIELLA

Type species: Degeeriella discocephalus (Burmeister, 1838) (By subsequent designation, Johnston and Harrison, 1911. Proc. Linn. Soc. N. S. W., 36: 326).


Type species: Nirmus fuscus Denny, 1842.

Philopteridae not exceeding 3 mm. in length; usually without marked sexual dimorphism, but females larger. Head circumfasciate; marginal carina entire dorsally; ventrally it may be interrupted medially; hyaline margin may be apparent as a narrow rim around the anterior margin of the head; dorsal postantennal suture absent in all New England forms. Antennae filiform and similar in both sexes. Temporal carinae absent. Prothorax with rounded or parallel lateral margins and straight posterior margin; one posterolateral or posterior elongated seta on each side. Sternal plate narrowed anteriorly, normally with three setae on each side. Pterothorax with sides diverging. Abdomen with nine apparent segments in the male and eight in the female.

Clay (1958) has reviewed this genus and many of the following descriptions are from her revision.
Degeeriella discocephalus discocephalus (Burmeister, 1838)
Sci., 6: 499, pl. 67, fig. 6.
Type host: Haliaeetus albicilla (Linnaeus)--Gray Sea Eagle.
New England host: Haliaeetus leucocephalus (Linnaeus)--Bald Eagle.

Marginal carina thick and entire; ventral suture reaches to or nearly to inner margin of marginal carina. Posterodorsal setae of margin of pterothorax 4-6 on each side, omitting the lateral spine-like seta and the seta with sunken alveolus. Tergite II with median unsclerotized area, tergite III somewhat narrowed medially. The female of this species differs from all other Degeeriella in having two, occasionally one, seta in the middle of the anterior region of tergite IX.

Material examined: Haliaeetus leucocephalus (Linnaeus)
No Locality No Date U. N. H. Coll.
D. discocephalus discocephalus was not found.

Material examined: Slides
Waltham, Mass. Nov. 12, 1921 R. H. Howe (USNM Slide)

A subspecies of D. discocephalus, Degeeriella discocephalus aquilarum Eichler, 1943b, is found on the Golden Eagle, Aquila chrysaetos (Linnaeus). I have collected neither the Golden Eagle nor this subspecies of Mallophaga.
Degeeriella fulva (Giebel, 1874)

Nirmus flavidus Giebel, 1874. Insecta Epizoa: 301.

Type host: *Aquila chrysaetos* (Linnaeus)—Golden Eagle.

Other New England hosts:
Buteo jamaicensis (Gmelin)—Red-tailed Hawk.
Buteo lineatus (Gmelin)—Red-shouldered Hawk.
Buteo lagopus (Pontoppidan)—Rough-legged Hawk.

Inner dorsal margin of marginal carina indented medially; ventral suture passes to anterior margin of head. Dorsal head sutures not apparent. Tergite II only with definite median unsclerotized indentation. Pleural thickening of segments III-VI usually with well developed re-entrant heads, inner edges comparatively straight.

Maximum and minimum measurements of specimens from *Buteo* spp. (from Clay, 1958):

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.50 - .58</td>
</tr>
<tr>
<td>Head Width</td>
<td>.38 - .47</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.23 - .30</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.38 - .48</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.00 - 1.32</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.48 - .67</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.75 - 2.23</td>
</tr>
</tbody>
</table>
Material examined: *Aquila chrysaetos* (Linnaeus)

None.

Material examined: *Buteo jamaicensis* (Gmelin)

None.

Material examined: Slides

Harpswell, Maine

Nov. 28, 1926

A. O. Gross

(USNM Slide)

Winchester, N. H.

Sept. 25, 1933

L. R. Nelson

(USNM Slide)

Material examined: *Buteo lineatus* (Gmelin)

Concord, N. H.

Sept. 1, 1964

J. E. K.

*S. fulva* was not found.

Material examined: *Buteo lagopus* (Pontoppidan)

None.

Material examined: Slides

Winchester, N. H.

Jan. 7, 1934

L. R. Nelson

(USNM Slide)

Rye, N. H.

Sept. 1, 1934

L. R. Nelson

(2 USNM Slides)

*Degeeriella fusca* (Denny, 1842)


*Nirmus socialis* Giebel, 1874. *Insecta Epizoa*: 127.


Type host: *Circus aeruginosus* (Linnaeus).
New England host:
*Circus cyaneus* (Linnaeus)—Marsh Hawk.

Dorsal surface of head with an area of lighter sclerotization between the anterior dorsal setae. Inner dorsal margin of marginal carina indented medially. Tergites II-III with median indentation; central area of tergite II more strongly pigmented than lateral areas.
Pleural thickening broad and strongly pigmented with dark inner line, contrasting with the rather lightly sclerotized terga but not as marked in *Circus cyanus* as in *Circus aeruginosus*.

Peters (1936) reports this species from Alabama, New Hampshire, Pennsylvania and South Carolina; Brimley (1938) North Carolina; Emerson (1940) Oklahoma; and Whitehead (1954) from Quebec.

Material examined: *Circus cyaneus* (Linnaeus)

No Locality No Date U. N. H. Coll.

A single female *D. fusca* was collected from this bird skin.

Material examined: Slides

Newmarket, N. H. Oct. 15, 1901 E. G. Davis
Cape Cod, Mass. No Date C. M. Herman (Emerson Coll.)

It is unknown if the Newmarket material is of this species since it has been lost.

*Degeeriella nisus nisus* (Giebel, 1866)


Type host: *Accipiter nisus* (Linnaeus).

New England host:

*Accipiter striatus* Vieillot—Sharp-shinned Hawk.

Inner edge of marginal carina straight or with slight median indentation; small area of dorsal thickening immediately below marginal carina; ventral suture does not reach to anterior margin of head. Marginal temporal carinae broad with many indentations. Terga II-III indented medially. Pleural thickening broad with ventral outline convex.
Measurements: *Degeeriella nisus nisus* (Giebel, 1866)
(from Clay, 1958)

<table>
<thead>
<tr>
<th>(Mean)</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.49</td>
</tr>
<tr>
<td>Head Width</td>
<td>.36</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.23</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.36</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.99</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.48</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.72</td>
</tr>
</tbody>
</table>

Material examined: *Accipiter striatus* Vieillot.

None.

Material examined: Slides

Winchester, N. H. Oct. 22, 1932 L. R. Nelson (USNM Slide)

A subspecies of *D. nisus*, *Degeeriella nisus vagans* (Giebel, 1874), is found on the Goshawk, *Accipiter gentilis* (Linnaeus), and Cooper's Hawk, *Accipiter cooperii* (Bonaparte).

It differs from *D. nisus* in the larger average size in both sexes, the inner edge of the marginal carina, which is usually more indented medially, and the narrower and less indented marginal carinae of the temples.
Measurements: *Degeeriella nisus vagans* (Giebel, 1874)  
(from Clay, 1958)  
(Mean) Male

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.54</td>
</tr>
<tr>
<td>Head Width</td>
<td>.42</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.28</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.44</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.11</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.57</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Material examined: *Accipiter gentilis* (Linnaeus)

No Locality          No Date                  U. N. H. Coll.  
Stratton, Maine      Sept. 9, 1965              H. Tyler

*D. nisus vagans* was not found.

Material examined: *Accipiter cooperii* (Bonaparte)

No Locality          No Date                  U. N. H. Coll.  

*D. nisus vagans* was not found.

*Degeeriella regalis regalis* (Giebel, 1866)  
*Nirmus vittatus* Giebel, 1874. Insecta Epizoa: 127.  
*Nirmus appendiculatus* Piaget, 1880. Les Pediculines: 132, pl. 11, fig. 2.  
*Nirmus incertus* Piaget, 1885. Les Pediculines, Supplement: 20, pl. 2, fig. 9.  
Type host: *Milvus milvus* Linnaeus.  
New England Host:  
*Buteo jamaicensis* (Gmelin)--Red-tailed Hawk.
The Red-tailed Hawk is also the host for Degeeriella fulva. D. regalis regalis superficially resembles D. fulva but can be separated by the number of sternocentral setae.

Seg. II-VI

D. FULVA normally 4

D. REGALIS normally 6 on seg. II
normally 8 on segs. III-VI

Material examined: Buteo jamaicensis (Gmelin)

None.

Degeeriella rufa rufa (Burmeister)
Nirmus burmeisteri Giebel, 1874. Insecta Epizoa: 126.
Nirmus platyclypeatus Piaget, 1880. Les Pediculines: 145, pl. 12, fig. 1.
Degeeriella falconoides Carriker, 1956. Florida Ent., 39: 42,
figs. 39 and 40a.
Type host: Falco tinnunculus Linnaeus.
New England hosts:
Falco peregrinus Tunstall—Peregrine Falcon.
Falco columbarius Linnaeus—Pigeon Hawk.

Inner edge of marginal carina not or slightly indented medially;
ventral suture variable in form, does not reach anterior margin of
head. Tergites II-III with median indentation, that of III occasionally partly occluded; tergites of segment IX in male present as two well-marked sclerites; penial sclerite absent. Female with tergites IX-XI fused with a continuous unsclerotized area around the two setae on each side. Genital plate differs from all other species in North America in having a central posterior prolongation.

Measurements: D. rufa rufa from Falco tinnunculus (from Clay, 1958)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.50</td>
<td>.53</td>
</tr>
<tr>
<td>Head Width</td>
<td>.40</td>
<td>.43</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.26</td>
<td>.28</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.37</td>
<td>.41</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.15</td>
<td>1.31</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.53</td>
<td>.59</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.90</td>
<td>2.14</td>
</tr>
</tbody>
</table>

Material examined: Falco peregrinus Tunstall.

None.

Material examined: Falco columbarius Linnaeus.

No Locality No Date U. N. H. Coll.

D. rufa rufa was not found.

Material examined: Slides

Lincoln, Maine Jan.-June, 1941 W. J. Clayton

Two male and two female D. rufa rufa were seen.

A subspecies of D. rufa, Degeeriella rufa carruthi Emerson, 1953, is found on the Sparrow Hawk, Falco sparverius Linnaeus (fig. 40).
This subspecies has a narrower preantennal region, the anterior margin sometimes being rather pointed, but this character may be absent. In the male there is only one seta on each side of the ventral endomeral arm instead of two as in *D. rufa rufa*.

Material examined: *Falco sparverius* Linnaeus

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
</table>

The Epsom, New Hampshire, collection and the Litchfield, New Hampshire, collection both yielded one male each of *D. rufa carruthi*. 
FALCOLIPEURUS

Type species: Esthiopterum secretarium (Diebel, 1874).


Elongate Philopteridae; adults average three to five millimeters in length. Head longer than wide; forehead rounded in front with four to six circular incrassations on lateral margins; clypeal signature absent; eyes present. Postantennal region slightly wider than pre-antennal region. Mandibles set between antennae. Longitudinal band on each side of ventral surface of occiput extending to base of mandible. Gular plate well developed. Antennae five-segmented, normal in female; first segment enlarged with appendage on posterior margin in male, third segment produced apically into a long, curved hook. Prothorax with sides subparallel; pterothorax slightly wider than prothorax. Abdomen with well developed paratergal plates on abdominal segments I-VII usually connected by less developed median bands; tergite VIII usually with complete transverse plate. Spiracles present on abdominal segments II-VII.
Falcolipeurus marginalis (Osborn, 1902)
Type host: Cathartes aura (Linnaeus)--Turkey Vulture.

Head long, rounded in front, slightly narrowing apically, posterior margin slightly emarginate. There are six inflated incrassations along the border anterior to the antennae, three on each side. Pterothorax and abdominal segments with slender dark marginal lines. Legs with narrow black borders on the outer margin of femur and tibia (fig. 41). Described from two females collected at Ames, Iowa.

Material examined: Slide
Lincoln, Maine June 17, 1938 W. J. Clayton
(9♂, 7♀)

The above collection was made from Coragyps atratus (Bechstein)--Black Vulture, which is also a host for this species of mallophagan but a very rare bird in New England.

Measurements: Falcolipeurus marginalis (Osborn, 1902).

\[
\begin{array}{cc}
5♂ & 5♀ \\
\hline
\text{Total Length} & 3.27 - 3.37 & 3.49 - 3.73 \\
& (3.33) & (3.58)
\end{array}
\]

The number in parentheses is the mean.
Falcoliipeurus suturalis (Rudow, 1869a)

Lipeurus quadripustulatus Denny, 1842 (nec Burmeister, 1838).

Mon. Anopl. Brit.: 58 and 167, pl. 16.


Lipeurus dennyi Giebel, 1874. Insecta Epizoä: 211. (nn for L.
quadripustulatus Denny, 1842).

Lipeurus variopictus Giebel, 1874. Insecta Epizoä: 211 (in par-
tim).

Type host: Aquila chrysaëtos (Linnaeus)--Golden Eagle.

I have no information concerning this species of Mallophaga.
FULICOFFULA

   Type species: Esthiopterum luridum (Nitzsch, 1818).

   Type species: Lipeurus rotundatus Piaget, 1888.

   Type species: Lipeurus picturatus Kellogg, 1896 (A synonym of Lipeurus longiphilus Kellogg, 1896).

Elongate Philopteridae. Head with large dorsal anterior plate bearing a median longitudinal slit and a striated anterior margin; clypeal suture distinct and continued inward across the dorsal surface of the head and down the median line as a narrow suture as far as the mandibles. Trabeculae small and similar in the two sexes; antennae sexually dimorphic; gular plate large. Abdomen narrow and elongate, with segment IX bilobed in the male and more deeply bilobed in the female, and partly flanked on each side by a pointed prolongation of segment VIII. Male genitalia with parameres always broadened and unthickened dorsally.
Fulicoffula americana Emerson, 1960b
Fulicoffula americana Emerson, 1960b. J. Kansas Ent. Soc., 33:
162, figs. 1-4.
Type host: Porzana carolina (Linnaeus)–Sora.

Head wider in male than in female. Temples rounded with a long
seta at each posterolateral angle. Prothorax square with rounded
angles; pterothorax longer than wide with two setae at each posterolateral angle. Abdomen elongate with segments VI-VIII short in the
male; a pair of short setae on each tergite and sternite. Female
genital plate with a fringe of fine hairs; male genitalia with a
prominent mesosomal plate (fig. 42).

There are two species of Fulicoffula found on Porzana carolina,
therefore, all records prior to the publication by Emerson (1960b) are
subject to re-examination. He reports this species from New York,
Oklahoma, Virginia and Kansas.

Material examined: Porzana carolina (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. americana</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
</tbody>
</table>

Fulicoffula comstocki (Kellogg and Chapman, 1902)
Lipeurus comstocki Kellogg and Chapman, 1902. J. N. Y. Ent. Soc.,
10: 23, pl. 3, fig. 2.
Type host: Rallus limicola Vieillot–Virginia Rail.

Head elongate conical, front rounded, a short hair at the clypeal
suture; sides of head diverging slightly with a short fine hair in
front of the trabeculae; eye small with a fine bristle; temporal mar-
gins parallel; occipital margin concave. Prothorax almost square;
pterothorax quadrangular, longer than wide, posterior margin with a
narrow acute median angle on the abdomen. Abdomen long and narrow,
segments gradually widening to the fourth, fifth and sixth segments; posterolateral angles with one or two long hairs.

This rare mallophagan was described from one female collected in New York. Peters (1928) reports this species from Ohio.

Material examined: *Rallus limicola* Vieillot

None.

*Fulicoffula distincta* Emerson, 1960b


Type host: *Porzana carolina* (Linnaeus)--Sora.

This is an atypical species that Emerson (1960b) separated from all other species by the following characteristics: Narrow head in both sexes; short stout spines on the posterior margin of the female genital plate; short abdominal segments IV-V in the male; long, slender, simple pararaeres, and the absence of a prominent mesosomal plate in the male genitalia.

This species has been collected in Oklahoma, Idaho, Florida, Mississippi, and New York.

Material examined: *Porzana carolina* (Linnaeus)

No Locality No Date U. N. H. Coll.

*Fulicoffula distincta* was not found.

*Fulicoffula longiphila* (Kellogg, 1896)


Type host: *Fulica americana* Gmelin--American Coot.
Head elongate, conical, with four marginal hairs in front of suture and three behind it. Antennae of male with second segment largest, third with a claw-like distal end; filiform, normal in female. Antennal bands broad, dark and straight; temporal margins bordered with black. Prothorax almost square; pterothorax quadrangular, longer than wide; anterior angles diagonally truncate; posterior margin straight, with three long setae and one shorter seta in each posterolateral angle. Abdomen elongate, first segment narrower than thorax at articulation, segments gradually widening to the fifth and narrowing to the ninth.

Measurements: *Fulicoffula longiphila* (Kellogg, 1896)  
(from Kellogg, 1896)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.53</td>
<td>.55</td>
</tr>
<tr>
<td>Head Width</td>
<td>.35</td>
<td>.35</td>
</tr>
<tr>
<td>Width</td>
<td>.40</td>
<td>.50</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.40</td>
<td>2.65</td>
</tr>
</tbody>
</table>

Material examined: *Fulica americana* Gmelin  
No Locality No Date U. N. H. Coll.  
*F. longiphila* was not found.

Material examined: Slides  
(B. M. S. Coll.)
GONIOCOTES

Type species: Ricinus gallinae DeGeer, 1778 (By subsequent designation, Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 326).

Type species: Goniocotes haplogonus Nitzsch, 1866.

The general characteristics of the genus Goniocotes are quite similar to those of the genus Goniodes Nitzsch, 1818, except that this genus is smaller in size and the antennae of the male are never appendiculated. The antennae of the males sometime have the first and second segments larger than the corresponding segments of the females. Meso- and metathorax fused into a pterothorax. Parameres of the male genitalia very elongate stylets. Members of this genus are ectoparasitic on birds of the order Galliformes.
Goniocotes chrysocephalus Giebel, 1874

Type host: Phasianus colchicus Linnaeus--Ring-necked Pheasant.

Emerson (1951) reports this species from Montana.

Material examined: Phasianus colchicus Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haverhill, Mass.</td>
<td>April 5, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 1, 1964</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 6, 1964</td>
<td>G. L. Walker</td>
</tr>
</tbody>
</table>

Goniocotes chrysocephalus was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt. Carmel, Conn.</td>
<td>April 18, 1943</td>
<td>G. H. Plumb</td>
</tr>
<tr>
<td>West Greenwich, R. I.</td>
<td>April 15, 1958</td>
<td>J. A. Mathewson</td>
</tr>
</tbody>
</table>

Both of these contain Goniocotes from the Ring-necked Pheasant.

However, I have been unable to find a description of this species and with the existing figures it is impossible for me to distinguish this species from Goniocotes gallinae (DeGeer, 1778). Emerson (1951) states that he was unable to find many instances of lice infesting birds which were not considered the normal hosts. Therefore, these are quite likely G. chrysocephalus.

Goniocotes gallinae (DeGeer, 1778)

Type host: Chicken

This species has two long setae on the temporal lobes directed caudad; abdominal segments with very slender lateral bands which are widely separated medially; color pale yellow. This mallophagan is
known as the "fluff louse" (fig. 43).

I did not actively collect Mallophaga from domestic chickens during the course of this study but I have seen this species collected from a Ruffed Grouse, Pittsfield, N. H., March 2, 1964, A. H. Mason. The USNM also has several slides of this species collected from the same host.
GONIODES

Type species: Goniodes pavonis (Linnaeus, 1758) (By subsequent designation, Johnston and Harrison, 1911. Proc. Linn. Soc. N. S. W., 36: 326).

Type species: Goniodes chelicornis Denny, 1842 (A synonym of Goniodes bituberculatus Rudow, 1869)

Type species: Goniodes cervicornis Giebel, 1874.

Type species: Goniodes dissimilis Denny, 1842.

Type species: Goniodes dispar Burmeister, 1833.

Type species: Goniocotes asteroccephalus Burmeister, 1838.

Type species: Goniocotes coronatus Giebel, 1874.

Type species: Goniocotes macrocephalus Taschenberg, 1882.

Type species: Goniocotes gigas Taschenberg, 1879.

Type species: Goniodes eurygaster Piaget, 1885.

Type species: Goniodes processus Kellogg and Paine, 1914.

Type species: Goniodes extraneus Clay, 1940 (A synonym of Goniodes temporalis (Keler, 1939).

Type species: Goniodes wilsoni Clay, 1938.

Head circumfasciate; clypeal margin flattened or broadly rounded with clypeal angles prominent. Head without ventral sclerotized spine-like processes. Clavi undeveloped, represented by membranous lobes.
Temporal angle with lateroventral process bearing a small hair or spine in at least one sex, and usually in both. Occipital margin drawn out posteriorly to form an angle bearing a small hair or spine. Antennae may or may not be sexually dimorphic but in males segments IV-V are never modified or greatly reduced. Pterothorax without lateral indication of meso-metathoracic junction and always bearing ventrolaterally a fine hair arising from a pit in the integument. Hairs either present or absent on meso-metasternum; never present on metasternum alone.

Abdomen with first segment large with free lateral margin. Abdominal segments I-VII with tergal plates widely separated and sternal thickenings in form of lateral, never median, plates. Pleurites broad with complex re-entrant heads. Abdominal segment VII with fine lateral hair arising from a pit in the integument. Abdomen of males consisting of nine segments, eighth greatly reduced and appearing as a lateral rudiment on each side; genital opening dorsal and bearing long setae on the anterior and posterior margins. Abdomen of females consisting of apparently eight segments, actually ten. Tergal plate VIII continuous across segment; vulva either terminal or at level of seventh segment and variable in form.
Goniodes bonasus Emerson, 1948

Type host: Bonasa umbellus (Linnaeus)—Ruffed Grouse.

Female with clypeal margin broadly rounded. Temporal angle with lateroventral process bearing a seta and a short spine. Head wider than long. Prothorax one-half as wide as head, with nearly straight sides diverging from front to rear. Pterothorax triangular. Male antenna with first segment enlarged, without a process; third produced distally at right angles to the fourth segment. Abdomen more rounded than in female; pleurites each with 3 or 4 long dorsal setae (fig. 44).

Emerson (1948) reported this species from Montana. Emerson (1951) reported it from New York, Montana and Colorado.

Material examined: Bonasa umbellus (Linnaeus)

Madbury, N. H. Nov. 16, 1963 G. L. Walker
Pittsfield, N. H. Mar. 6, 1964 A. H. Mason
Barrington, N. H. Aug. 21, 1964 J. E. K.
Madbury, N. H. Jan. 4, 1965 G. L. Walker
Raymond, N. H. Oct. 6, 1965 D. Sutherland

Goniodes bonasus was not found.

Goniodes colchici Denny, 1842

Type host: Phasianus colchicus Linnaeus—Ring-necked Pheasant.

This species has no meso-metasternal setae. The sternal plates on abdominal segments undivided; dorsal chaetotaxy of the first abdominal segment, 2-8-2. Female with 12 to 15 setae in a concentration at each
posterolateral angle of the vulva.

Geist (1931) has reported this species from Ohio and Emerson (1951) from California, Iowa, Montana, Oregon, British Columbia, and Ontario.

Material examined: *Phasianus colchicus* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haverhill, Mass.</td>
<td>April 5, 1964</td>
<td>J. E. K.</td>
<td></td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 1, 1964</td>
<td>B. Smith</td>
<td></td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 6, 1964</td>
<td>G. L. Walker</td>
<td></td>
</tr>
</tbody>
</table>

*Goniodes colchici* Denny, 1842, was not found.

*Goniodes dissimilis* Denny, 1842


Type host: Chicken.

This is the "brown chicken louse" common throughout the United States. It will be discussed together with the following species, *G. gigas* (Taschenberg, 1879) which is also a parasite of the chicken.

*Goniodes gigas* (Taschenberg, 1879)


*Goniocotes gigas* Taschenberg, 1879. Z. ges. NatWiss., 52: 104, pl. 1, fig. 10.

*Goniocotes abdominalis* Piaget, 1880. Les Pediculines: 238, pl. 20, fig. 9.

Type host: Guinea Fowl.
New England host: Chicken.

*G. gigas* is known as the "large chicken louse" and is common on the domestic chicken. *G. dissimilis* and *G. gigas* may be distinguished by the following key:
Antennae similar in the two sexes. Three long setae on each temple---------------------*G. gigas*

Antennae sexually dimorphic. Two long setae on each temple---------------------*G. dissimilis*

No attempt was made to collect Mallophaga from the chicken during the course of this study.
INCIDIFRONS

Type species: Philopterus pertusus Burmeister, 1838 (A synonym of Pediculus fulicae Linnaeus, 1758).

Head large, with conspicuous rounded temples and prominent forehead with slightly concave sides. Anterior margin of head deeply incised or notched, the notch being flanked by converging, hyaline flaps. Dorsal anterior plate conspicuous, undivided. Trabeculae large. Antennae short and similar in the two sexes. Pterothorax broader than long, sides divergent, posterior margin either outwardly rounded or angulate. Abdomen stout, with nine segments, the last being very small; abdominal spiracles conspicuous, six pairs (fig. 45). Members of the genus Incidifrons are ectoparasitic on birds of the order Gruiformes.
**Incidifrons monachus** (Kellogg and Paine, 1911)


Type host: *Rallus limicola* Vieillot—Virginia Rail.

Head with eight hairs on each side of the clypeus. Clypeus extending from the trabeculae to the expansion of the pincer-like preantenal region. Dorsal surface of first abdominal segment sinuous and projected caudad medially and at each posterolateral angle; sixteen setae on the posterior margin of segment V, with the number diminishing anteriorly and posteriorly. This species was described from one male collected at Monterey, California, and appears to be only published record of the species in North America.

Material examined: *Rallus limicola* Vieillot

None.

**Incidifrons transpositus** (Kellogg, 1896)


Type host: *Fulica americana* Gmelin—American Coot.

Head with closed forcep-points; trabeculae reaching beyond segment one of the antennae; temporal margins with two long setae and a short one between them; temporal region dark brown with a narrow black border; a narrow black occipital border. Prothorax with rounded sides and angles. Abdomen obovate; segments III-VI with two or three short hairs.

Kellogg (1896) described this species from a single female collected in Kansas. Peters (1928) reports it from Ohio, Peters (1936) reports it from Illinois, North Carolina, and South Carolina, Brimley
(1938) records it from North Carolina, and Whitehead (1954) from Quebec.

Material examined: *Fulica americana* Gmelin

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
</table>
| *Incidifrons transpositus* was not found.

Measurements: *Incidifrons transpositus*  
(from Kellogg, 1896)

<table>
<thead>
<tr>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.56</td>
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<tr>
<td>Head Width</td>
<td>.59</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.90</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.00</td>
</tr>
</tbody>
</table>
LAGOPOECUS

Type species: Nirmus cameratus Burmeister, 1838.

Head longer than wide, rounded in front. Eyes prominent, each with a long seta. Antennae filiform and similar in the two sexes. Temples convexly rounded, each with two long setae; cephalic margin without setae. Prothorax short, wide, with one long seta at each post-erolateral angle. Pterothorax short, wide, with posterior setae. Abdomen short and wide. Tergal plates with median setae; long setae in the posterolateral angles; and post spiracular setae. Sternal plates with a pair of median setae. Members of this genus are parasitic on birds of the order Galliformes.
Lagopoecus colchicus Emerson, 1949


Type host: Phasianus colchicus Linnaeus—Ring-necked Pheasant.

Clypeal margin evenly rounded, with scattered small setae. Eyes prominent, each with one long seta. Temples rounded, each with two long setae and three short setae. Cephalic margin without setae. Prothorax short, narrow, with one long seta on each posterolateral angle. Pterothorax twice as wide as long. Abdominal tergal plates with eight median setae and one post-spiracular seta on each posterolateral angle. Pleural plates of segments III-IV, each with one long seta; segments V-VIII, each with two long setae. Sternal plates with two median setae.

Emerson (1950) records this species from Utah, Michigan, Illinois, and Montana.

Material examined: Phasianus colchicus Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haverhill, Mass.</td>
<td>April 5, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 1, 1964</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 6, 1964</td>
<td>G. L. Walker</td>
</tr>
</tbody>
</table>

Lagopoecus colchicus was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusets</td>
<td>April 26, 1926</td>
<td>Peters (M. C. Z. Coll.)</td>
</tr>
<tr>
<td>Mt. Carmel, Conn.</td>
<td>April 18, 1942</td>
<td>G. H. Plumb (Conn. Ag. Exp. Sta. Coll.)</td>
</tr>
</tbody>
</table>
Lagopoecus sinensis (Sugimoto, 1930)

Type host: Chicken.

I have no information concerning this species of Lagopoecus.

Lagopoecus umbellus Emerson, 1950

Lagopoecus umbellus Emerson, 1950. J. Kansas Ent. Soc., 23: 101, pl. 1, fig. 8, and pl. 2, fig. 6.
Type host: Bonasa umbellus (Linnaeus)—Ruffed Grouse.

Head with clypeal margin evenly rounded and with small scattered setae. Eyes prominent, each with a long seta. Temples convexly rounded, each with two long setae; caudal margin without setae. Prothorax short, wide, with one long seta at each posterolateral angle. Pterothorax more than twice as wide as long, with eight long setae in groups of two each arranged along the posterior margin. Abdomen with one pair of sternal setae on each abdominal segment. Vulva of female with posterior marginal row of short setae (fig. 46).


Material examined: 

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madbury, N. H.</td>
<td>Nov. 16, 1963</td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Pittsfield, N. H.</td>
<td>March 6, 1964</td>
<td>A. H. Mason</td>
</tr>
<tr>
<td>Barrington, N. H.</td>
<td>Aug. 21, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Madbury, N. H.</td>
<td>Jan. 4, 1965</td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Raymond, N. H.</td>
<td>Oct. 6, 1965</td>
<td>D. Sutherland</td>
</tr>
</tbody>
</table>

Lagopoecus umbellus was not found.
Material examined: Slides
Bar Harbor, Maine July 23, 1936 A. E. B.

This collection contained 2 male and 23 female L. umbellus.
LIPEURUS

Type species: Pediculus caponis Linnaeus, 1758 (By subsequent

Long and slender Philopteridae. Head rounded in front, that of
male usually with a post-antennal constriction, width at temples
usually less than width at widest part of preantennal region. Females
differ in having no post-antennal constriction and in having the width
at the temples equal to, or greater than, the preantennal width.
Trabeculae of female shorter than in male and triangular in outline;
those of male narrow, curved on the anterior margin. Antennae of male
with first segment enlarged and extended, bearing a short appendage.
Third segment with distal angle projected. Antennae of female filiform.
Preantennal region without suture or modification of the integument.
Prothorax without lateral setae or spines; meso-metathoracic junction
usually visible on the lateral margin of the pterothorax. Abdomen
elongate, pleurites without complex re-entrant heads and similar in both
sexes. Tergal plates of male transversely continuous; setae few; female
with thickening in the form of tergal plates on abdominal segments
II-VI, usually more pronounced toward the center, forming a central
hour-glass pattern, not always apparent.
Lipeurus caponis (Linnaeus, 1758)
Lipeurus antennatus Piaget, 1885 (nec Giebel, 1874). Les Pediculines, Supplement: 75, pl. 8, fig. 3.
Lipeurus lineatus McGregor, 1971a (nec Giebel, 1874). Psyche, 24: 114, pl. 7, figs. 2 and 5.
Lipeurus bakeri Carriker, 1956. Florida Ent., 39: 128, fig. 76.
Type host: Chicken.

Body long and slender; abdomen with comparatively few scattered setae on the dorsum, these setae not confined to form a wide median stripe, front of head evenly rounded. In the male, post-antennal constriction present; greatest width of head in the preantennal region (fig. 47).

This mallophagan has a world-wide distribution on the domestic chicken. It is known as the "wing louse" and is the only species commonly found on the primary and secondary wing feathers.

I have not collected this species of Mallophaga.

Lipeurus maculosus Clay, 1938
Type host: Phasianus colchicus Linnaeus—Ring-necked Pheasant.

I do not have a description of this species of Lipeurus. The
genus *Lipeurus* does not naturally occur on New World Galliformes and a
great many of the Ring-necked Pheasants in New England are raised in
state game farms and released reducing the chances for infestation by
Mallophaga.

Emerson (1951) has reported this species from Connecticut, New
Jersey, Oregon, Wisconsin, and British Columbia.

Material examined: *Phasianus colchicus* Linnaeus

<table>
<thead>
<tr>
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<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haverhill, Mass.</td>
<td>April 5, 1964</td>
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</tr>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 1, 1964</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 6, 1964</td>
<td>G. L. Walker</td>
</tr>
</tbody>
</table>

*Lipeurus maculosus* was not found.
**Lunaceps**


Type species: *Degeeriella actophila* (Kellogg and Chapman, 1899).

Head with narrow hyaline margin arising from the clypeal suture; internal and clypeal bands broadly fused anteriorly for about a third of their length; dorsal anterior plate small and irregular in shape and may be joined to fused part of clypeal and internal bands. Dorsal antennal bands pass inwards on each side to form a transverse suture across head. Dorsal occipital band and transverse antennal band absent. Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates simple without inwardly directed process and only rarely with elongated re-entrant heads. Tergal plates transversely continuous and rarely with partial median division.
LUNACEPS

Type species: Degeeriella actophila (Kellogg and Chapman, 1899).

Head with narrow hyaline margin arising from the clypeal suture; internal and clypeal bands broadly fused anteriorly for about a third of their length; dorsal anterior plate small and irregular in shape and may be joined to fused part of clypeal and internal bands. Dorsal antennal bands pass inwards on each side to form a transverse suture across head. Dorsal occipital band and transverse antennal band absent. Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates simple without inwardly directed process and only rarely with elongated re-entrant heads. Tergal plates transversely continuous and rarely with partial median division.
**Lunaceps holophaeus** (Burmeister, 1838)


*Nirmus bicolor* Piaget, 1880. Les Pediculines: 175, pl. 14, fig. 9.

Type host: *Philomachus pugnax* (Linnaeus)—Ruff.

New England hosts:
- *Calidris canutus* (Linnaeus)—Knot.
- *Erolia maratima* (Brünnich)—Purple Sandpiper.
- *Crocethia alba* (Pallas)—Sanderling.
- *Ereunetes pusillus* (Linnaeus)—Semipalmated Sandpiper.

Subspecies of *Lunaceps holophaeus* have been erected by Timmermann (1954b) to cover the forms found on small waders. The *Lunaceps* complex is difficult to characterize at species level because they show such little plasticity of shape. Even the male genitalia, an important taxonomic character in most other genera, are of the same type throughout the entire genus.

Material examined: *Calidris canutus* (Linnaeus)

Phippsburg, Maine Sept. 1, 1965 H. Tyler

Six male and eleven female *L. holophaeus* were collected.

Measurements: *L. holophaeus* (Burmeister, 1838)

Total Length of 6 males:
1.45, 1.41, 1.50, 1.50, 1.44, 1.48

Total Length of 6 females:
1.57, 1.56, 1.71, 1.59, 1.45, 1.72

Material examined: *Erolia maratima* (Brünnich)


*L. holophaeus* was not found.

Material examined: *Ereunetes pusillus* (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
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</thead>
<tbody>
<tr>
<td>Madbury, N. H.</td>
<td>Nov. 22, 1964</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>
One of the Hampton birds yielded 2 male and 1 female Lunaceps holophaeus. The Madbury collection yielded 3 male and 7 female L. holophaeus.

Measurements: L. holophaeus, 4 males and 4 females, from E. pusillus.

Total Length of 4 males:
1.59, 1.60, 1.59, 1.65

Total Length of 4 females:
1.74, 1.83, 1.84, 1.77

Material examined: Crocethia alba (Pallas)

L. holophaeus was not found.

Material examined: Slides
Charlestown, R. I. Aug. 27, 1961 L. Terbush
(U. R. I. Coll.)

The Charlestown, Rhode Island, collection contained 4 male, 2 female, and 3 immature L. holophaeus. One of the males had a total length of 1.51 mm.

Lunaceps limosella paschalis Timmermann, 1954b
Type host: Limosa haemastica (Linneus)—Hudsonian Godwit.

Timmermann (1954b) erected the species group Limosa for those Lunaceps found on various godwits. He stated that, "A definite judgement of the validity and limitation of this species can hardly be obtained before a greater number of specimens from L. lapponica and all
nearer related populations have been subjected to a mathematical test of their variability."

*L. limosella paschalis* is a small member of the *Limosa* group with a much shorter head and a clypeus without a dorsal preantennal suture.

Measurements:  *L. limosella paschalis* Timmermann, 1954b (from Timmermann, 1954b)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
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</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.39 - .40</td>
<td>.36 - .40</td>
</tr>
<tr>
<td>Head Width</td>
<td>.29 - .32</td>
<td>.29 - .32</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.36 - .47</td>
<td>.41 - .47</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.55 - 1.56</td>
<td>1.39 - 1.60</td>
</tr>
</tbody>
</table>

Material examined:  *Limosa haemastica* (Linnaeus)


Two male and one female *L. limosella paschalis* were recovered from this bird. The female was infested with a *Laboubeniales* fungus on the abdomen.

Measurements:  *L. limosella paschalis*

<table>
<thead>
<tr>
<th></th>
<th>2 Males</th>
<th>1 Female</th>
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<tbody>
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<tr>
<td>Head Width</td>
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<td>.30</td>
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<tr>
<td>Abdomen Width</td>
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<td>.48</td>
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<td>Total Length</td>
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<td>1.53</td>
</tr>
</tbody>
</table>
Lunaceps numenii phaeopi (Denny, 1842)
Nirmus phaeopodis Giebel, 1874. Insecta Epizoa: 166.
Degeeriella oliveri Johnston and Harrison, 1912. Trans. N. Z. Inst., 44: 367, fig. 3.
Type host: Numenius phaeopus (Linnaeus)—Whimbrel.

Timmermann (1954b) places this species in the Numenius group, and the numenii-phaeopi subgroup of the Lunaceps complex, which is characterized by parameres being equally curved (sabre-shaped) (fig. 48).

Material examined: Numenius phaeopus (Linnaeus)

Phippsburg, Maine Sept. 9, 1965 H. Tyler (3 birds)

All three birds were infested with L. numenii phaeopi, a total of 10 males and 11 females.

Measurements: Lunaceps numenii phaeopi (Denny, 1842)

<table>
<thead>
<tr>
<th></th>
<th>8♂</th>
<th>8♀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1.71 - 1.90</td>
<td>1.86 - 2.07</td>
</tr>
<tr>
<td>Average</td>
<td>1.81</td>
<td>(1.98)</td>
</tr>
<tr>
<td>Total Length</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lunaceps sp.

Two males and one immature from Erolia melanotos (Vieillot)—Pectoral Sandpiper, Brunswick, Maine, September 13, 1965, H. Tyler collector. One male and two females from Erolia alpina (Linnaeus)—Dunlin, Hampton, New Hampshire, October 10, 1964, J. E. K. collector. Both of these are at most subspecies of Lunaceps holophaeus.
Type species: Esthiopterum hypoleucum (Denny, 1842).

Head with rounded or flattened hyaline anterior margin; clypeal suture distinct and prolonged inward, dorsally on each side, to form a narrow and irregular suture, which is continued backwards along the median line of the head to a point just behind the posterior margin of the clypeal signature; trabeculae small; antennae filiform and similar in the two sexes. Thorax with lateral margins of both pro- and pterothorax flattened and diverging distally to a slight extent. Abdomen elongated, with segment I short and with nine segments in both sexes. Pleurites distinct, with elongated pointed re-entrant heads. Genitalia with short basal plate; parameres prolonged, pointed and somewhat curved distally; endomeres straight, pointed terminally and shorter than parameres; telomeres small but distinct.
Mulcticola macrocephalus (Kellogg, 1896)
Type host: Chordeiles minor (Forster)—Common Nighthawk.

Described by Kellogg from many specimens collected in California. This species has also been reported by Peters (1936) from Maine, New Hampshire and South Carolina. Mulcticola macrocephalus (Kellogg, 1896) is the only known species of the genus found in North America. The genus description and fig. 49 are sufficient to determine this species. I have been unable to collect this species of mallophagan.
ORNITHOBIIUS

Type species: Ornithobius cygni (Linnaeus, 1758) (By subsequent designation, Johnston and Harrison, 1911, Proc. Linn. Soc. N. S. W., 36: 326).

Type species: Metopeuron punctatum Rudow, 1870 (By subsequent designation, Harrison, 1916, Parasitology, 9:22).


Head broad, quadrangular, about as wide as long. Clypeus with frontal emargination expanded within, so that the bounding sides are pincer-like in shape, the points almost touching, thus nearly enclosing the emargination. Antennae arise far in front of the middle of the head and are sexually dimorphic. Antennae of male with first two segments larger than the others; third segment diagonally truncate and expanded with or without an appendage. Abdomen narrow, elongate, with two parallel lateral bands on each side. Posterior abdominal segment in male pointed; that of female, rounded or truncate. Members of this genus are parasitic on birds of the subfamilies Cygninae and Anserinae.
Ornithobius goniopleurus Denny, 1842

Ornithobius goniopleurus Denny, 1842. Mon. Anopl. Brit.: 60 and 184, pl. 23, fig. 2.
Ornithobius atromarginatus Denny, 1842. Mon. Anopl. Brit.: 60 and 185, pl. 23, fig. 3.

Type host: Branta canadensis (Linnaeus)—Canada Goose.

This is the only species of the genus Ornithobius to be found in New England and easily recognizable by the presence of a forcipate clypeal margin (fig. 50). O. goniopleurus is a common parasite of the Canada Goose. Wilson (1928) reports it from New York, Peters (1928) from Ohio, Peters (1936) Georgia and New Hampshire, Brimley (1938) North Carolina, and Spencer (1947) from British Columbia.

Material examined: Branta canadensis (Linnaeus)

Plum Island,
Plum Island,

All of the above collections contained O. goniopleurus.

Newmarket - 2♂ 1♀
Exeter - 6♂ 6♀
Plum Isl. - 1♂ 5♀
Plum Isl. - 1♂ 4♀

Material examined: Slides

(USNM Slide)
Bar Harbor, Maine May 10, 1938 A. E. B. (1♀)
Vassalboro, Maine Oct. 30, 1959 Nash (4♀ 1♂)
Measurements: *Ornithobius goniopleurus* Denny, 1842.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.97 .82 1.02</td>
<td>.82 .84 .67</td>
</tr>
<tr>
<td>Head Width</td>
<td>.91 .73 .85</td>
<td>.81 .78 .64</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.52 .42 .51</td>
<td>.43 .46 .40</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.97 .75 .93</td>
<td>.81 .76 .63</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>3.30 2.49 2.85</td>
<td>2.28 2.14 1.51</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>1.27 .99 1.17</td>
<td>1.09 1.08 .61</td>
</tr>
<tr>
<td>Total Length</td>
<td>5.37 4.02 4.77</td>
<td>3.93 3.75 2.88</td>
</tr>
</tbody>
</table>
OXYLIPEURUS

Type species: Lipeurus inaequalis Piaget, 1880.

Type species: Eiconolipeurus importunus Carriker, 1945.

Type species: Lipeurus clavatus McGregor, 1917.

Head circumfasciate, that of the female generally broader than that of male. Chitin of the anterior portion of the head modified either into a number of projections or into a raised transverse line across head. Transverse line across head. Transverse clypeal suture present and a curved, indefinite post-antennal suture passes posteriorly from each antennal fossa. Trabeculae variable in size and shape and may be present or absent in female (fig. 51). Antennae sexually dimorphic; first segment of male enlarged and bearing, in some species, a broad membranous appendage not always apparent, third segment produced beyond the point of articulation with fourth. Occipital bands absent in all but one known species. Prothorax with lateral seta or spine; lateral indication of meso- metathoracic junction rarely marked. Abdomen with characteristic internal curved strut in known North American species; pleurites with re-entrant heads. Male genitalia variable in form with flattened endomeral plate, free penis and no preputial sac.
Oxylipeurus mesopelios colchicus Clay, 1938


Type host: Phasianus colchicus Linnaeus—Ring-necked Pheasant.

Head longer than wide; trabeculae small, transparent; antennae exhibiting sexual dimorphism, third segment of male with an appendage; forehead rounded in front with two long setae. Prothorax square bearing two medium length setae on the dorsal posterior margin. Pterothorax about as wide as head with two closely grouped series of four long setae on the dorsal posterior margin. Abdomen long bearing two tergo-central setae on each segment.

At the present time, this is the only species of the genus found on wild New England birds.

Material examined: Phasianus colchicus Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haverhill, Mass.</td>
<td>April 5, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>Oct. 1, 1964</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 6, 1964</td>
<td>G. L. Walker</td>
</tr>
</tbody>
</table>

Oxylipeurus mesopelios colchicus was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt. Carmel, Conn.</td>
<td>April 18, 1943</td>
<td>G. H. Plumb (Conn. Ag. Exp. Sta. Coll.)</td>
</tr>
</tbody>
</table>

Two female Oxylipeurus mesopelios colchicus.
Measurements: *Oxyliepeurus mesopelios colchicus* Clay, 1938.

2 Females

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Measurement</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.61</td>
<td>.60</td>
</tr>
<tr>
<td>Head Width</td>
<td>.45</td>
<td>.43</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.31</td>
<td>.31</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.45</td>
<td>.46</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.30</td>
<td>1.42</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.55</td>
<td>.63</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.37</td>
<td>2.50</td>
</tr>
</tbody>
</table>
PECTINOPYGUS

Type species: Lipeurus pullatus Nitzsch, 1866 (A synonym of Pectinopygus bassani (O. Fabricius, 1780)).

Type species: Naubates (Micronaubates) garbei Pessoa and Guimaraes, 1935.

Type species: Lipeurus forficulatus Nitzsch, 1866.

Type species: Lipeurus gracilicornis Piaget, 1880.

Type species: Lipeurus brevicornis Denny, 1842.

Head slightly longer than broad, conical, with sides of preantennal region straight or slightly convex, dorsal anterior plate distinct, somewhat hexagonal and longer than wide. Trabeculae small, reaching the middle of the first antennal segment; antennae alike in both sexes or, in some species sexually dimorphic. Temporal lobes rounded, and wider than head at the insertion of the antennae. Prothorax about twice as wide as long, sides slightly divergent, with dorsal setae of varying lengths at each posterolateral angle; pterothorax trapezoidal with sides slightly divergent. Thoracic sternal plate well developed. Legs long. Abdomen elongate with pleural and sternal plates distinct. Terminal abdominal segment of female bilobed; vulva with dense fringe of setae. Male genitalia distinctive, the parameres smooth and slender with free or fused distal ends. Members of this genus are parasitic on birds of the order Pelecaniformes.
Pectinopygus bassani bassani (O. Fabricius, 1780)


Docophorus bassanae Denny, 1842. Mon. Anopl. Brit.: 48 and 110, pl. 6, fig. 3.


Type host: Morus bassanus (Linnaeus)—Gannet.

Head slightly longer than wide. Dorsal anterior plate square, well defined, with two small posterolateral posteriorly directed projections. Clypeal region about one-quarter of the length of the head. Antennae sexually dimorphic, first segment of male enlarged, third segment with distal projection. Prothorax more than twice as broad as long; a small spear-shaped sternite present with two small hairs on the posterior margin on either side of the mid-line. Pterothorax slightly narrower than head at its greatest width. Abdomen stout. Slightly less than twice as long as wide.

Measurements: Pectinopygus bassani bassani
(from Thompson, 1940)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Length</td>
<td>3.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Greatest Width</td>
<td>.77</td>
<td>.8</td>
</tr>
</tbody>
</table>

Material examined: Morus bassanus (Linnaeus)

None.

Material examined: Slides

Wells River, Vt. Nov. 6, 1938 W. F. Smith (K. C. Emerson Coll.)
Pectinopygus farallonii (Kellogg, 1896)


Type host: Phalacrocorax auritus (Lesson)—Double-crested Cormorant.

Head conical, narrow in front; trabeculae small; temporal margins rounded; occipital margin slightly concave; antennae sexually dimorphic; those of the female short, filiform, with segment two the longest, segments of male antennae in the following order of length: one, two, three, five, four; segment one very long and curving anteriorly giving the two antennae the appearance of a set of horns. Dorsal anterior plate shield-shaped. Prothorax wider than long, with rounded angles. Pterothorax with lateral margins diverging slightly, posterior margin straight. Abdomen elongate, with posterior angles projecting, with two or three rather long hairs in each angle (fig. 52).


Material examined: Phalacrocorax auritus (Lesson)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Sex</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harbor Island, Muscongus Bay, Maine</td>
<td>July 19, 1963</td>
<td>A. C. Borror</td>
<td>1♂ 2♀</td>
<td>P. farallonii</td>
</tr>
</tbody>
</table>
Ipswich, Mass. Oct. 16, 1965 Coll. ?

P. farallonii was not found in the last two collections.

Measurements:  **Pectinopygus farallonii** (Kellogg, 1896)

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.63</td>
<td>.64</td>
<td>.61</td>
<td>.61</td>
</tr>
<tr>
<td>Head Width</td>
<td>.58</td>
<td>.58</td>
<td>.57</td>
<td>.57</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.43</td>
<td>.45</td>
<td>.43</td>
<td>.43</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.57</td>
<td>.60</td>
<td>.58</td>
<td>.60</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.87</td>
<td>1.92</td>
<td>1.65</td>
<td>1.69</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.75</td>
<td>.73</td>
<td>.82</td>
<td>.96</td>
</tr>
<tr>
<td>Total Length</td>
<td>3.06</td>
<td>3.09</td>
<td>2.68</td>
<td>2.75</td>
</tr>
</tbody>
</table>

**Pectinopygus gyricornis** (Denny, 1842)


**Lipeurus toxoceros** Nitzsch, 1866.  *In Giebel, Z. ges. NatWiss., 28: 386*.

**Lipeurus longicornis** Piaget, 1880.  *Les Pediculines*: 334, pl. 27, fig. 3.

Type host:  *Phalacrocorax carbo* (Linnaeus)—Great Cormorant.

Head longer than wide; clypeal region short; dorsal anterior plate oblong in shape; trabeculae small; antennae sexually dimorphic, those of female short, filiform; antennae of male with very long first segment. Prothorax two and one-half times as wide as long with two long setae either side of the median line on the ventral surface. Pterothorax slightly narrower than the head; lateral margins heavily sclerotized and pigmented; posterior margin almost straight. Abdomen elongate.
I have been unable to collect the Great Cormorant and have seen no Mallophaga from it during the course of this study.

Measurements: *Pectinopygus gyricornis* (Denny, 1842)
(from Thompson, 1946)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatest Width</td>
<td>.56</td>
<td>.77</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.66</td>
<td>2.45</td>
</tr>
</tbody>
</table>
PENENIRMUS

   Type species: Pediculus albiventris Scopoli, 1763.

   Type species: Picophilopterus tuktola Ansari, 1947.

Head with lateral clypeal margins converging sharply towards the clypeal suture and then converging gradually towards the anterior hyaline margin of head. Dorsal anterior plate pointed posteriorly. Trabeculae narrow and pointed in both sexes; antennae filiform and similar in both sexes. Temples rounded but never swollen beyond the extension of the line of the lateral clypeal margin. Ventral occipital bands present, but no dorsal occipital bands as in the genus Philopterus. Occiput with a curved suture originating from the antennal fossa. Prothorax rectangular; pterothorax narrow and pointed posteriorly. Abdomen elongate and hairy, with terminal segment of the male rounded posteriorly, terminal segment of female bilobed. Pleurites distinct with re-entrant heads; tergal plates either narrowly separated medially or continuous, or joined by a narrow posterior chitinous strip. Male genitalia with parameres curved and not protruding beyond the mesosome; the latter consisting of a flattened plate with central penis.
**Penenirmus albiventris** (Scopoli, 1763)


*Pediculus motacillae* J. C. Fabricius, 1776. *Gen. Ins.*: 310 (nn for *P. albiventris* Scopoli, 1763).


Type host: *Troglodytes troglodytes* (Linnaeus)—Winter Wren.

I have no data on this species and have been unable to find any records of its collection in the United States.

**Measurements:**  
*Penenirmus albiventris* (Scopoli, 1763)  
(from Clay and Hopkins, 1951)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.42</td>
<td>.48</td>
</tr>
<tr>
<td>Head Width</td>
<td>.37</td>
<td>.45</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.20</td>
<td>.25</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.33</td>
<td>.40</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.73</td>
<td>1.13</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.45</td>
<td>.63</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.33</td>
<td>1.85</td>
</tr>
</tbody>
</table>

**Material examined:** *Troglodytes troglodytes* (Linnaeus)

Albany, N. H.  
Aug. 4, 1964  
A. H. Mason

*P. albiventris* was not found.

**Penenirmus auritus** (Scopoli, 1763)


Type host: Dendrocopos major (Linnaeus)
New England hosts:

Dryocopus pileatus (Linnaeus)—Pileated Woodpecker.
Sphyrapicus varius (Linnaeus)—Yellow-bellied Sapsucker.
Dendrocopos villosus (Linnaeus)—Hairy Woodpecker.
Dendrocopos pubescens (Linnaeus)—Downy Woodpecker.

Penenirmus auritus is found on all North American Piciformes excluding Colaptes spp. The marginal temporal setae 2 and 4 elongate. Pterothorax and tergites III-V with an average of four centro-posterior setae (Dalgleish, 1965) (fig. 53).

Peters (1928) reports this species on the Yellow-bellied Sapsucker from Ohio. Peters (1936) records P. auritus on the Downy Woodpecker from Ohio and Virginia and on the Yellow-bellied Sapsucker from Florida, Maryland, South Carolina, and Vermont. Emerson and Johnson (1961) record it from the Downy Woodpecker in Virginia, Oklahoma, and Indiana; from the Yellow-bellied Sapsucker in Arizona, Indiana, Virginia, Alaska, and California; from the Pileated Woodpecker in Oregon, Washington, and Arkansas; and from the Hairy Woodpecker in New York, Mississippi, Oregon, Montana, and California.

Material examined: Dryocopus pileatus (Linnaeus)

No Locality No Date U. N. H. Coll.

P. auritus was not found.
Material examined: *Sphyrapicus varius* (Linnaeus)

Sandwich, N. H. May 6, 1964 J. E. K. (2 birds)
Bartlett, N. H. Sept. 25, 1964 J. E. K.

One of the Sandwich, New Hampshire, birds was infested with 9 male and 13 female *P. auritus*.

Measurements: *P. auritus* from *Sphyrapicus varius*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.48</td>
<td>.52</td>
</tr>
<tr>
<td>Head Width</td>
<td>.45</td>
<td>.46</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.27</td>
<td>.28</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.46</td>
<td>.48</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.93</td>
<td>1.12</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.55</td>
<td>.63</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.74</td>
<td>1.99</td>
</tr>
</tbody>
</table>

Material examined: *Dendrocopos villosus* (Linnaeus)

Durham, N. H. Dec. 12, 1963 J. E. K.
Bartlett, N. H. Sept. 25, 1964 J. E. K.

*P. auritus* was not found.

Material examined: *Dendrocopos pubescens* (Linnaeus)


*P. auritus* was not found.

Material examined: Slides

Augusta, Maine Mar. 7, 19 ? A. E. B.

This collection contained 1 male, 2 female, and 9 immature *P. auritus*.
Penenirmus gulosus (Nitzsch, 1866)

Nirmus trimarginis Carriker, 1902. J. N. Y. Ent. Soc., 10: 222, pl. 20, fig. 2, and pl. 21, fig. 5.
Type host: Certhia familiaris Linnaeus--Brown Creeper.

Carriker (1902) reported this species from Nebraska and this is the only record from the United States.

Head triangular with the preantennal region narrowly truncate; trabeculae slender, bluntly pointed, as long as the first antennal segment; eye with a long seta; temples rounded with two long setae and several short bristles; occipital margin concave. Prothorax short, quadrangular, with lateral margins diverging slightly; posterior angles rounded, each with a long seta. Pterothorax with sides widely diverging; posterior margin angulated with several setae. Abdomen elongate-oval, widest at the fourth and fifth segments.

Measurements: Penenirmus gulosus (Nitzsch, 1866)
(from Carriker, 1902)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.44</td>
<td>.50</td>
</tr>
<tr>
<td>Head Width</td>
<td>.44</td>
<td>.50</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.50</td>
<td>.61</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.40</td>
<td>1.87</td>
</tr>
</tbody>
</table>

Material examined: Certhia familiaris Linnaeus

Epsom, N. H. Feb. 28, 1964 J. E. K.
Durham, N. H. May 10, 1965 J. E. K. (2 birds)

Penenirmus gulosus was not found.
**Penenirmus jungens** (Kellogg, 1896)


Type host: *Colaptes auratus* (Linnaeus)—Yellow-shafted Flicker.


Material examined: *Colaptes auratus* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>May 7, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Dover, N. H.</td>
<td>Sept. 16, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Dover, N. H.</td>
<td>Sept. 18, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Bartlett, N. H.</td>
<td>Sept. 29, 1965</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>

The Lee, New Hampshire, collection yielded a single immature female *Penenirmus jungens* (Kellogg, 1896).

**Penenirmus quadripustulatus** (Kellogg and Mann, 1912a)


Type host: *Pipilo erythrophthalmus* (Linnaeus)—Rufous-sided Towhee.

The setae of the abdominal segments are regularly arranged, four in a row. Equidistant on each side of the row, close to the posterior margin of the segment is an additional pustulate hair. On the sixth segment there are only two central setae and on the penultimate and last
segments only the marginal setae are pustulate.

I have found no records of this species being collected in the United States.

Material examined: *Pipilo erythropthalmus* (Linnaeus)

Epping, N. H.     June 4, 1964  J. E. K.
Keene, N. H.      Aug. 21, 1964  J. E. K.
Rochester, N. H.  May 30, 1965  B. Smith

*Penenirmus quadripustulatus* was not found.
PHILOPTERUS


Type species: Philopterus ocellatus (Scopoli, 1763) (By subsequent designation, Clay 1938a. Entomologist, 71: 207).

Type species: Claviella schulzkampfhenkeli Eichler, 1940.

Type species: Philopterus excisus Nitzsch, 1818.

Type species: Philopterus claviformis Piaget, 1885.

Type species: Docophorus communis passeris Piaget, 1880 (A synonym of Philopterus fringillae (Scopoli, 1772).

Type species: Tritrabeculus goshikidori Uchida, 1948.

Type species: Docophorus singularis Kellogg and Chapman, 1899 (A synonym of Philopterus picae (Denny, 1842).

Type species: Campephagoecus osculolimbatus Eichler, 1952.

Head broad, quadrangular, forehead truncate and dorsal anterior plate prominent. Trabeculae large; antennae filiform and similar in the two sexes; segment I large. Eyes large with an ocular seta present in most species. Temporal lobes expanded and evenly rounded. Occipital carinae distinct and well pigmented. Prothorax small with convex sides; one elongate seta at each posterolateral angle; pterothorax with sides diverging distally; one or more elongate setae present at each posterolateral angle and a row of setae along the dorsoposterior margin. Abdomen robust with deeply pigmented plates interrupted medially and with
serrate posterior margins. Abdominal chaetotaxy dense, consisting in most species of transverse rows of rather closely set, long setae on or near posterior margin of each abdominal segment. Genitalia of male with short blunt parameres.

Members of this genus are parasitic on birds of the order Passeriformes. In other areas they may be found on the order Trogoniformes.

**Philopterus agelaii** (Osborn, 1896)  

Type host: *Agelaius phoeniceus* (Linnaeus)—Red-winged Blackbird.

This is a small *Philopterus* characterized by a rectangular shaped preantennal region, almost as wide at the tip as at the base of the trabeculae. Trabeculae large, anterior margin curved.

Peters (1928) reports this species from Ohio and Spory (1965) has collected this species on seven of sixty-one Red-winged Blackbirds in the same state.

Material examined: *Agelaius phoeniceus* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>April 2, 1963</td>
<td>Coll. ? (2 birds)</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>April 3, 1963</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Brentwood, N. H.</td>
<td>April 20, 1965</td>
<td>A. H. Mason</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>June 7, 1965</td>
<td>D. Holman</td>
</tr>
</tbody>
</table>

One of the birds collected April 2, 1963, yielded 4 female and 4 immature *Philopterus agelaii*. 
Measurements: **Philopterus agelaii** (Osborn, 1896)

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.51</td>
</tr>
<tr>
<td>Head Width</td>
<td>.52</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.30</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.46</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.79</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.75</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.65</td>
</tr>
</tbody>
</table>

**Philopterus citrinellae curvirostrae** (Schrank, 1776)

*Pediculus curvirostrae* Schrank, 1776. Beitr. Naturgesch.: 117, pl. 5, fig. 8.

*Docophorus compar* Piaget, 1880. Les Pediculines: 61, pl. 7, fig. 1.

Type host: **Loxia curvirostra** Linnaeus—Red Crossbill.

Typical Philopterus form with hyaline margin and dorsal anterior plate indented in front. The indentation in the hyaline margin is not always apparent in mounted specimens. In this subspecies of *P. citrinellae* there are 4 or more setae on the metasternal plate, and in the male 3 (rarely 4) anterior setae on the genital plate.

I have found no published records of this species in the United States.

Material examined: **Loxia curvirostra** Linnaeus

None.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar Harbor, Maine</td>
<td>Fall 1937</td>
<td>A. E. B.</td>
</tr>
<tr>
<td>Bar Harbor, Maine</td>
<td>April 30, 1938</td>
<td>M. Sullivan</td>
</tr>
</tbody>
</table>

The collection of 1937 yielded 1 male and 5 females. The 1938
Philopterus corvi (Linnaeus, 1758)
Nirmus adustus Olfers, 1816. De Veget...: 88.
Docophorus semisignatus Denny, 1842. Mon. Anopl. Brit.: 41 and 66, pl. 1, fig. 5.
Type host: Corvus corax Linnaeus--Common Raven.

This species of Philopterus may be distinguished from all related species by having the dorsal anterior plate sclerotized only at the anterior end.

Measurements: Philopterus corvi (Linnaeus, 1758)
(from Clay and Hopkins, 1950)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.70</td>
<td>.72</td>
</tr>
<tr>
<td>Head Width</td>
<td>.66</td>
<td>.75</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.00</td>
<td>1.06</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.85</td>
<td>.97</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.95</td>
<td>2.03</td>
</tr>
</tbody>
</table>

Material examined: Corvus corax Linnaeus

Stratton, Maine Sept. 6, 1965 H. Tyler

Five male and two female P. corvi were recovered from this raven.

In the literature, P. corvi has been reported many times as the parasite of the crow, Corvus brachyrhynchos. The type host for P. corvi is the Common Raven and upon examination of Philopterus from both of these birds it is obvious that the two species are not the same. Those P. corvi found on the crow refer to Philopterus ocellatus osborni Edwards,
Philopterus cristata Malcomson, 1929

Type host: Cyanocitta cristata (Linnaeus)—Blue Jay.

Head as long as wide, preantennal region broad; clypeus with two setae in front and one on each side. Dorsal anterior plate very prominent, extending to a point caudad of the mandibles. Eye with a long seta dorsally. Trabeculae large, extending the length of the first antennal segment. The temporal margin bears three long hairs on each side. Prothorax small with a single long seta in each posterolateral angle. Pterothorax almost as wide as head with four long setae in each posterolateral angle and twenty-four setae along the dorsoposterior margin. Abdomen globose and generally covered with long setae.

Material examined: Cyanocitta cristata (Linnaeus)

Rumney, N. H. March 25, 1963 Coll. ?
Amherst, N. H. April 1, 1964 J. E. K.
Sandwich, N. H. May 6, 1964 J. E. K.
Farmington, N. H. May 8, 1964 J. E. K.
Durham, N. H. June 4, 1964 J. E. K.
Lee, N. H. Aug. 15, 1965 R. L. Blickle
Durham, N. H. Aug. 16, 1965 R. M. Reeves
Durham, N. H. Aug. 18, 1965 J. E. K.
Bedford, N. H. Oct. 6, 1965 D. W. Sutherland

One of the birds collected on September 30, 1964, yielded 2 female Philopterus cristata. After examining these 27 blue jays, I cannot agree with the statement made by Malcomson (1929) that, "I have found the blue jay to be very heavily infested with this particular species
Philopterus excisus microsomaticus Tandan, 1955


Type host: *Hirundo rustica* Linnaeus—Barn Swallow.

Anterior hyaline margin indented medially. Large trabeculae.

Dorsal anterior plate prolonged posteriorly into a point; sclerotized and uniformly pigmented. Prothorax with one long seta on either side of the midline on the posterodorsal margin. Abdomen rounded, widest at segment V. Tergal plates of segment II approximate; III-VIII with widely separated tergal plates.

Measurements: Philopterus excisus microsomaticus
(from Tandan, 1955)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.37 - .40</td>
<td>.42 - .48</td>
</tr>
<tr>
<td>Head Width</td>
<td>.34 - .35</td>
<td>.39 - .40</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.18 - .20</td>
<td>.21 - .22</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.28 - .30</td>
<td>.34</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.47 - .51</td>
<td>.70 - .72</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.45 - .49</td>
<td>.52 - .58</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.08 - 1.13</td>
<td>1.39 - 1.42</td>
</tr>
</tbody>
</table>

Material examined: *Hirundo rustica* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albany, N. H.</td>
<td>May 15, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>June 4, 1965</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Portsmouth, N. H.</td>
<td>June 23, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>
One male was recovered from the Albany, New Hampshire, collection.

Material examined: Slides

Martha's Vineyard, Mass.       June 2, 1924       G. M. Allen
                                     (USNM Slide)

Philopterus fringillae (Scopoli, 1772)

Pediculus passeris DeFourcroy, 1785. Ent. Parisiensis, pt. 2:
2519 (nn for "P. subflavescens Geoffroy").
Docophorus communis passeris Piaget, 1880 (nec DeFourcroy, 1785).
Les Pediculines: 59.
Type host: Passer domesticus (Linnaeus)—House Sparrow.

Hyaline margin with median indentation on anterior margin (fig. 54).

Measurements: Philopterus fringillae (Scopoli, 1772)
(from Clay and Hopkins, 1951)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.55</td>
<td>.58</td>
</tr>
<tr>
<td>Head Width</td>
<td>.50</td>
<td>.56</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.29</td>
<td>.32</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.45</td>
<td>.50</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.70</td>
<td>1.02</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.68</td>
<td>.91</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.45</td>
<td>1.85</td>
</tr>
</tbody>
</table>

Material examined: Passer domesticus (Linnaeus)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Nov. 12, 1962</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Mar. 26, 1965</td>
<td>D. Olson (5 birds)</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Aug. 18, 1965</td>
<td>G. L. Walker</td>
</tr>
</tbody>
</table>

P. fringillae was not found.
It appears that *P. fringillae* is an uncommon parasite of the House Sparrow since I have not recovered it in 43 examinations of this species of bird. These results are supported by Wilson (1958) who did not find *P. fringillae* in examination of 77 House Sparrows in Kentucky.

**Philopterus fuscicollis** (Burmeister, 1838)  
Type host: *Lanius excubitor* Linnaeus--Northern Shrike.

I have no information on this species of *Philopterus*.  
Material examined: *Lanius excubitor* Linnaeus

None.  
Material examined: Slides  
(USNM Slide)  
(USNM Slide)  
Groton, Mass. Nov. 11, 1939 Wharton-Mason  
(USNM Slide)

**Philopterus fuscoventralis** (Osborn, 1896)  
Type host: *Contopus virens* Linnaeus--Eastern Wood Pewee.

Head longer than wide with hyaline margin indented medially; dorsal anterior plate large, projecting as a spine-like point posteriorly to a point midway between the antennae; temporal lobes rounded; occiput nearly straight. Prothorax small, sides diverging slightly. Pterothorax widening rapidly; posterodorsal margin with a row of long setae. Abdomen oval.
Aside from Osborn's (1896) original description, I have found no records of the recovery of this species in the United States.

Material examined: **Contopus virens** Linnaeus

Albany, N. H.  July 29, 1964  J. E. K.

*P. fuscoventralis* was not found.

**Philopterus hamatus** (Packard, 1870)


Type host: **Plectrophenax nivalis** (Linnaeus)—Snow Bunting.

I have been unable to find anything more than the original description of this species which is as follows:

...white and has a large triangular head, with a very narrow prothorax, not much more than one-half as wide as the head; the abdomen is rounded oval, while the trabeculae are very long and hooked.

Material examined: **Plectrophenax nivalis** (Linnaeus)


*P. hamatus* was not found.

Material examined: Slides

Kittery Point, Maine  Feb. ?, 1908  M. C. Z. Coll. (initials R. J.)

**Philopterus hanzaki** Balat, 1955


Type host: **Anthus spinoletta** (Linnaeus)—Water Pipit.
I have no data on this species of Mallophaga and have never collected *Anthus spinoletta* (Linnaeus).

*Philopterus quiscali* (Osborn, 1896)


Type host: *Quiscalus quiscula* (Linnaeus)—Common Grackle.

A short broad species very similar to *Philopterus agelaii* (Osborn, 1896). Preantennal region broad, lateral angles rounded, in some cases as wide at tip as at base of trabeculae. Trabeculae large, curved, and with rather acute tips. Pterothorax with long setae along the posterodorsal margin. Eighth abdominal segment with tergal plate entire; other tergites interrupted medially.

Osborn (1896) reports this species from Iowa; Wilson (1928) New York; Peters (1928) Ohio; Peters (1936) Massachusetts; Brimley (1938) North Carolina; and Whitehead (1954) Quebec.

Material examined: *Quiscalus quiscula* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 9, 1962</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 2, 1963</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Apr. 3, 1963</td>
<td>Coll. ? (2 birds)</td>
</tr>
<tr>
<td>No Locality</td>
<td>Apr. 15, 1963</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Strafford, N. H.</td>
<td>June 6, 1965</td>
<td>D. Holman</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>July 22, 1965</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>

*P. quiscali* was not found in any of the above 40 collections.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
</table>
Philopterus rutteri (Kellogg, 1899)

6: 12, pl. 1, fig. 3.

Type host: Parus atricapillus (Linnaeus)—Black-capped

Chickadee.

Preantennal region flatly convex in front with one seta before
the preantennal suture and two before the trabeculae; trabeculae long,
slender, and weakly curving; dorsal anterior plate large, projecting
posteriorly beyond the mandibles. Prothorax small with rounded mar-
gins and a single pustulated hair in each posterolateral angle, an-
other on the posterior margin just inside of the angles, and four
grouped together in the median region of the segment. Pterothorax
with a seta in the posterolateral angle and ten setae on each half of
the posterior margin. Abdomen oval; lateral angles projecting with
long setae.

In addition to the original description of this species from a
collection of one female and one immature specimen from Kodiak
Island, the only other report I have found is by Emerson (1940) from
Oklahoma.

Material examined: Parus atricapillus (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loudon, N. H.</td>
<td>Mar. 20, 1964</td>
<td>J. E. K.  (2 birds)</td>
</tr>
<tr>
<td>Dunbarton, N. H.</td>
<td>Mar. 27, 1964</td>
<td>J. E. K.</td>
</tr>
<tr>
<td>Milford, N. H.</td>
<td>Apr. 10, 1964</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>
Newfields, N. H.          Sept. 11, 1964  J. E. K.
Durham, N. H.            May 10, 1965  J. E. K.

P. rutteri was not found.

Philopterus sialii (Osborn, 1896)

Type host: Sialia sialis (Linnaeus)—Bluebird.

Preantennal region with hyaline margin emarginate in front.
Dorsal anterior plate with anterior margin emarginate and unevenly sclerotized. Pterothorax obtusely angled on abdomen.

Kellogg (1896) records this species from Kansas; Peters (1928) Ohio; Peters (1936) Florida, North Carolina, New Hampshire, New York, Ohio, South Carolina and Virginia; and Brimley (1938) North Carolina.

Measurements: Philopterus sialii (Osborn, 1896)
(from Kellogg, 1896)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.59</td>
<td>.63</td>
</tr>
<tr>
<td>Head Width</td>
<td>.56</td>
<td>.63</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.75</td>
<td>.90</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.72</td>
<td>2.12</td>
</tr>
</tbody>
</table>

Material examined: Sialia sialis (Linnaeus)
None.

Material examined: Slides
Augusta, Maine       June 26, 1943  A. E. B.
Philopterus tropicalis Carriker, 1956

Type host: Stelgidopteryx ruficollis (Vieillot)—Rough-winged Swallow.

Preantennal region with narrow frons, hyaline margin and dorsal anterior plate indented medially; temples with three long setae on each side. Prothorax very short. Pterothorax with 9 pustulated setae on each side of the midline. As of 1956, the female of this species was unknown and to the best of my knowledge is still unknown.

Measurements: Philopterus tropicalis Carriker, 1956

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.49</td>
</tr>
<tr>
<td>Head Width</td>
<td>.43</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.28</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.39</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.58</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.63</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.32</td>
</tr>
</tbody>
</table>

Material examined: Stelgidopteryx ruficollis (Vieillot)

None.
Type species: Physconelloides ceratoceps Ewing, 1927.

Type species: Goniocotacanthus matogrossensis Guimaraes, 1936.

Preantennal region broadly and evenly rounded in front; clypeal suture present. Preantennal region armed with a pair of posteriorly pointing, lateral horn-like processes which arise from the chitinous thickening just behind the clypeal suture; antennae short, second segment longest; temporal lobes large, squarish. Prothorax smaller than pterothorax, with sides strongly divergent posteriorly. Pterothorax short, but very broad with rounded lateral margins. Abdomen elongate-elliptical, widest at fourth and fifth segments. Mallophaga of this genus are parasitic on birds of the order Columbiformes.
Physconelloides zenaidurae (McGregor, 1917)

Type host: Zenaidura macroura (Linnaeus)—Mourning Dove.
Other New England host:
Domestic Pigeon.

The usual host for this species is the Mourning Dove, it being found only occasionally upon the pigeon. Physconelloides zenaidurae has been reported by McGregor (1917) from South Dakota, Peters (1928) Ohio, Peters (1936) from Ohio and Virginia, and Hanson, et al., (1957) from Illinois. All of the above collections were made from the Mourning Dove.

Physconelloides zenaidurae is the only species of the genus found in New England, therefore, the genus description and fig. 55 will serve for species identification.

Material examined: Zenaidura macroura (Linnaeus)

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newington, N. H.</td>
<td>Aug. 30, 1965</td>
<td>B. Smith</td>
</tr>
</tbody>
</table>

Material examined: Domestic Pigeon

<table>
<thead>
<tr>
<th>Locality</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concord, N. H.</td>
<td>Feb. 19, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Exeter, N. H.</td>
<td>Mar. 16, 1964</td>
<td>F. Kruger</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 21, 1965</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>

Physconelloides zenaidurae was not recovered from any of the above collections.
PICICOLA

Type species: Picicola praeposterus Clay and Meinertzhagen, 1938.

Type species: Nirmus foedus Kellogg and Chapman, 1899.

Head circumfasciate; trabeculae narrow and elongate in both sexes; antennae filiform and similar in both sexes. Antennal band with greatly thickened internal margin sometimes cellulated in appearance; occipital bands and suture present; temple bands thickened and sometimes showing cellulated appearance internally. Temples rounded but not greatly swollen. Abdomen elongate with segment I short; pleurites distinct with re-entrant heads. Genitalia with short curved parameres and mesosomal plate rounded posteriorly (fig. 56). Members of this genus are parasitic on birds of the orders Piciformes and Passeriformes.
Picicola mississippiensis (McGregor, 1917a)

Lipeurus mississippiensis McGregor, 1917a. Psyche, 24: 107, pl. 1, figs. 1 and 5.
Type host: Colaptes auratus (Linnaeus)--Yellow-shafted Flicker.

Head one-third longer than wide, with forehead slightly narrowed to a rounded front. Temples rounded; occiput slightly concave. Trabeculae prominent; antennal sinuses rather shallow; antennal bands conspicuous as wide, dark areas bordering the forehead, lighter anteriorly. Prothorax wider than long, rectangular with front and hind margins almost straight; a long seta at each posterolateral angle. Pterothorax with diverging sides and with twelve long setae along the posterior margin. Abdomen elongate, widest at the fifth segment.

Measurements: Picicola mississippiensis (McGregor, 1917a)
(from McGregor, 1917a)

<table>
<thead>
<tr>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.47</td>
</tr>
<tr>
<td>Head Width</td>
<td>.34</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.27</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.36</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.88</td>
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<tr>
<td>Abdomen Width</td>
<td>.43</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.62</td>
</tr>
</tbody>
</table>

Material examined: **Colaptes auratus** (Linnaeus)

Lee, N. H. 
Durham, N. H. 
Dover, N. H. 
Dover, N. H. 
Bartlett, N. H. 
Haverhill, Mass. 

Oct. 4, 1963 
May 7, 1964 
Sept. 16, 1964 
Sept. 18, 1964 
Sept. 25, 1964 
July 18, 1965

J. E. K. 
J. E. K. 
J. E. K. 
J. E. K. 
J. E. K. 

**Picicola mississippiensis** was not found.

Material examined: Slides

The Entomology Department at the University of New Hampshire has a single slide containing several specimens of *P. mississippiensis* collected at Columbus, Ohio, October 3, 1919, by P. R. Lowry.

**Picicola orpheus** (Osborn, 1896)


Type host: **Dumatella carolinensis** (Linnaeus)--Catbird.

The status of this species and its host are both in doubt at the present time. Edwards (1952) believes that the host, _Dumatella carolinensis_ (Linnaeus) is incorrect, and that it should be a species of woodpecker. I have found no records of the collection of this species in the United States.

Material examined: **Dumatella carolinensis** (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>(U. N. H. Coll.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madbury, N. H.</td>
<td>May 27, 1964</td>
<td>J. E. K.</td>
</tr>
</tbody>
</table>

**Picicola orpheus** was not found.
QUADRACEPS

   Type species: Degeeriella vanelli (Denny, 1842) (A synonym of Nirmus hospes Nitzsch, 1866).

   Type species: Nirmus punctatus Burmeister, 1838.

   Type species: Nirmus annulatus Denny, 1842.

   Type species: Nirmus ellipticus Nitzsch, 1866.

   Type species: Docophorus antennatus Piaget, 1880 (A synonym of Nirmus brunneus Nitzsch, 1866).

   Type species: Docophorus elongatus Piaget, 1885.

   Type species: Nirmus obliquus Mjöberg, 1910.

   Type species: Quadraceps haematopi (Denny, 1842) (A synonym of Quadraceps auratus (deHaan, 1829).

   Type species: Quadraceps decipiens (Denny, 1842).

   Type species: Quadraceps semifissus (Nitzsch, 1866).

   Type species: Peripetasma altoasiaticum Timmermann, 1954.

Quadraceps, which is more widely spread throughout the order Charadriiformes than Carduiceps and Lunaceps, is separated from them by the hyaline margin arising anterior to the clypeal suture and by the presence of a median dorsal preantennal suture.

Head with broad hyaline margin arising from near the anterior end of clypeal band; clypeal and internal bands fused near their
anterior ends but these ends are free. Dorsal antennal bands on each side pass inwards to form a narrow median suture. Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates with elongate re-entrant heads, but without inwardly directed processes. Tergal plates of some or all segments showing either partial or complete division into two. Segment IX of male clearly demarcated from segment VIII.
Quadraceps alconae (Carriker, 1959)


Type host: Mergaceryle alcyon (Linnaeus)—Belted Kingfisher.

Head large, wide at temples and frons. Dorsal anterior plate short and wide; preantennal carinae very heavily and deeply pigmented; trabeculae very short and triangular in shape. Prothorax quadrangular. Male genitalia with pointed parameres. Female unknown.

Measurements: Quadraceps alconae (Carriker, 1959)
(from Carriker, 1959)

<table>
<thead>
<tr>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.49</td>
</tr>
<tr>
<td>Head Width</td>
<td>.44</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.25</td>
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<td>Pterothorax Width</td>
<td>.37</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.80</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.48</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Material examined: Mergaceryle alcyon (Linnaeus)

Albany, N. H. July 29, 1964 J. E. K.
Westmoreland, N. H. Aug. 21, 1964 J. E. K.

Q. alconae was not found.

Material examined: Slides

Squibnocket, Mass. June 11, 1936 C. N. Smith
(USNM Slide)
Quadraceps assimilis major (Kellogg, 1899)

Type host: Charadrius sp.
New England host: Charadrius melodus Ord—Piping Plover.

Kellogg describes this subspecies as follows:

Differs from the types of fissus by having a hair in the eye, by having four pustulated hairs on each lateral half of the posterior margin of the meta-thorax instead of three, two being median and two being near the angle; by having the median longitudinal uncolored line of the abdomen limited to the first two segments, and by being markedly larger.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.30</td>
<td>.47</td>
</tr>
<tr>
<td>Head Width</td>
<td>.31</td>
<td>.33</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.38</td>
<td>.44</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.61</td>
<td>1.87</td>
</tr>
</tbody>
</table>

Material examined: Charadrius melodus Ord
Phippsburg, Maine Sept. 18, 1965 H. Tyler

One male Quadraceps assimilis major was collected.

Quadraceps charadrii hospes (Nitzsch, 1866)

Type host: Squatarola squatarola (Linnaeus)—Black-bellied Plover.
Head very long; dorsal anterior plate about as broad as long, lightly sclerotized anteriorly, pre- and postmarginal carinae very dark but narrow; temples with two long marginal setae. Gular plate with a central clear area looking like a perforation. Prothorax with one long seta in each posterolateral angle. Pterothorax with five long setae on each side of the posterodorsal margin. Abdomen elongate; pleurites darkly pigmented; tergites each with two tergocentral setae.

Measurements: *Quadraceps charadrii hospes* (Nitzsch, 1866)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.45</td>
<td>.48</td>
</tr>
<tr>
<td>Head Width</td>
<td>.31</td>
<td>.33</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.19</td>
<td>.22</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.27</td>
<td>.33</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.85</td>
<td>1.08</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.39</td>
<td>.45</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.63</td>
<td>1.86</td>
</tr>
</tbody>
</table>

Material examined: *Squatarola squatarola* (Linnaeus).

Brunswick, Maine Oct. 27, 1964 H. Tyler

Both collections yielded several specimens, both male and female, of *Q. charadrii hospes*. 
**Quadraceps fissus** (Burmeister, 1838)


*Nirmus hiaticulae* Denny, 1842 (nec O. Fabricius, 1780). Mon.
Anopl. Brit.: 52 and 136, pl. II, fig. 10.

pt. II, Anoplura: 21 (nn for *N. fissus* Burmeister, 1838)

Sci., 6: 83, pl. 6, fig. 6.

Type host: *Charadrius hiaticula* Linnaeus.
New England host:
*Charadrius semipalmatus* Bonaparte—Semipalmated Plover.

Head elongate, conical with colorless clypeal region slightly
expanded in front of the suture; five marginal setae in the prean­
tennal region; antennae not reaching the occipital margin; temples
flatly rounded with two long and two very short setae; occipital
margin straight.

Measurements: **Quadraceps fissus** (Burmeister, 1838)
(from Kellogg and Chapman, 1899)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.40</td>
<td>.47</td>
</tr>
<tr>
<td>Head Width</td>
<td>.31</td>
<td>.28</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.47</td>
<td>.45</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.11</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Material examined: *Charadrius semipalmatus* Bonaparte

Brunswick, Maine    Sept. 1, 1964    H. Tyler
Rye, N. H.          Sept. 4, 1965    B. Barrett

*Quadraceps fissus* was not found.
Quadraceps hiaticulae hiaticulae (O. Fabricius, 1780)
Type host: Charadrius hiaticula Linnaeus.
New England host: Charadrius semipalmatus Bonaparte—Semipalated Plover.

I do not have a description of this species but have the measurements given by Clay and Meinertzhagen (1954).

Measurements: Quadraceps hiaticulae hiaticulae

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.42</td>
<td>.42</td>
</tr>
<tr>
<td>Head Width</td>
<td>.23</td>
<td>.23</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.17</td>
<td>.18</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.25</td>
<td>.24</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.16</td>
<td>1.26</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.31</td>
<td>.30</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.83</td>
<td>1.90</td>
</tr>
</tbody>
</table>

Material examined: Charadrius semipalmatus Bonaparte

Brunswick, Maine  Sept. 1, 1964  H. Tyler
Rye, N. H.        Sept. 4, 1965  B. Barrett

Q. hiaticulae hiaticulae was not found.

There is a second subspecies found in New England, Quadraceps hiaticulae boophilus (Kellogg, 1896) parasitic upon the Killdeer, Charadrius vociferus Linnaeus.
Material examined: *Charadrius vociferous* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick, Maine</td>
<td>Sept. 4, 1964</td>
<td>H. Tyler</td>
</tr>
<tr>
<td>Rochester, N. H.</td>
<td>May 30, 1965</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 4, 1965</td>
<td>B. Barrett</td>
</tr>
<tr>
<td>Brunswick, Maine</td>
<td>Sept. 12, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

The Brunswick, Maine, collection September 4, 1964, yielded one male and four females; the Brunswick, Maine collection September 12, 1965, yielded one female *Quadraceps hiaticulae boophilus*.

*Quadraceps klatti* Timmermann, 1954


Type host: *Plautus alle* (Linnaeus)—Dovekie.

Anteriorly, the hyaline margin either straight or slightly convex; dorsal anterior plate pentagonal, as wide as long; trabeculae small but reaching at least to the end of the first antennal segment; temples rounded with one long seta. Prothorax small with a small long seta in each posterolateral angle; pterothorax with sides diverging and posterior angles rounded. Female terminal abdominal segment bilobed; male genitalia with thick heavy parameres.

Measurements: *Quadraceps klatti* Timmermann, 1954.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.42</td>
<td>.48</td>
</tr>
<tr>
<td>Head Width</td>
<td>.34</td>
<td>.40</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.22</td>
<td>.25</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.31</td>
<td>.43</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.72</td>
<td>1.02</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.36</td>
<td>1.77</td>
</tr>
</tbody>
</table>
Material examined: *Plautus alle* (Linnaeus)

Durham, N. H. Dec. 7, 1962 Coll. ?

*Q. klatti* was not found.

Material examined: Slides

Osterville, Mass. Jan. 21, 1931 G. L. Austin, Jr. (2 USNM Slides)


Bar Harbor, Maine Nov. 24, 1937 A. E. B.

The Bar Harbor collection contained Mallophaga from three Dove-kies. Included in this were 8 male and 12 female *Quadraceps klatti* Timmermann, 1954.

*Quadraceps nigrolimbatus* (Mjörberg, 1910)


Type host: *Limnodromus scolopaceus* (Say)—Long-billed Dowitcher.

Other New England host:

*Limnodromus griseus* (Gmelin)—Short-billed Dowitcher.

I have no description of this species. Both of these birds are occasional in New England, being found here during migrations.

Material examined: *Limnodromus griseus* (Gmelin)

Phippsburg, Maine July 19, 1964 H. Tyler

*Q. nigrolimbatus* was not found.

Material examined: Slides

Seabrook, N. H. Aug. 27, 1933 L. R. Nelson (USNM Slide)
Quadraceps nychthemerus (Burmeister, 1838)

Nirmus mesosomelas Nitzsch, 1874. In Giebel, Insecta Epizoa: 174, pl. 5, fig. 8.

Type host: Sterna albibrons Pallas—Least Tern.

I have no data on this species of Quadraceps and have not collected the Least Tern. Peters (1936) listed Degeeriella sp. from the Least Tern collected in South Carolina and Louisiana which is probably this species.

Quadraceps obliquus (Mööberg, 1910)


Type host: Uria aalge (Pontoppidan)—Common Murre.

I have not collected the Common Murre and have no data on this species of Quadraceps.

Quadraceps ornatus ornatus (Grube, 1851)

Nirmus ornatus Grube, 1851, Middendorff's sibir. Reise, 2: 477, pl. 31, fig. 4.

Type host: Larus canus Linnaeus—Mew Gull.

An easily recognized species because of the contrasting patterns on the body. Body white except for dark brown pleural plates and their re-entrant heads; light brown transverse bands on abdominal segments II-VII on female, II-VI on male. Lateral margin and a portion of the posterior margin of the prothorax rimmed in black. Several black blotches present along the lateral margins of the head.
Dorsal anterior plate with anterior margin lightly sclerotized.

Material examined: **Larus marinus** Linnaeus


Q. ornatus ornatus was not found.

Material examined: Slides

Marshfield, Mass. Dec. 30, 1930 2 USNM Slides

Quadraceps ornatus paulschulzei (Timmermann, 1949) is found on the Black-legged Kittiwake but I have collected neither the bird nor this species.

Another subspecies, Quadraceps ornatus striolatus (Nitzsch, 1866) is found on Larus hyperboreus Gunneruss—Glaucous Gull; Larus argentatus Pontoppidan—Herring Gull; and Larus marinus Linnaeus—Great Black-backed Gull. I have collected 7 female and 3 male of this species from an immature Herring Gull, Lee, New Hampshire, August 25, 1964.

Measurements: **Quadraceps ornatus**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.57</td>
<td>.58</td>
</tr>
<tr>
<td>Head Width</td>
<td>.55</td>
<td>.60</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.30</td>
<td>.31</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.49</td>
<td>.49</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>1.12</td>
<td>1.18</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.66</td>
<td>.69</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.05</td>
<td>2.13</td>
</tr>
</tbody>
</table>
Quadraceps punctatus regressus Timmermann, 1952


Type host: Larus argentatus Pontoppidan—Herring Gull.

This species may be separated from Quadraceps ornatus which may be found on the same host, by the following characters: head always considerably longer than wide, pointed; mandibles weak and small; antennae uncolored. In Q. ornatus the head is a little longer than wide; the mandibles are large; and the last segment of the antenna is brown in adult forms.

Material examined: Larus argentatus Pontoppidan

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danvers, Mass.</td>
<td>Aug. 19, 1964</td>
<td>Coll. ?</td>
</tr>
<tr>
<td>Rye, N. H.</td>
<td>Aug. 23, 1964</td>
<td>F. Kruger</td>
</tr>
<tr>
<td>Malden, Mass.</td>
<td>? 1965</td>
<td>Coll. ?</td>
</tr>
</tbody>
</table>

Q. punctatus regressus Timmermann, 1952, was not found.

Quadraceps punctatus sublingulatus Timmermann, 1952, is found on Larus delawarensis Ord—Ring-billed Gull and Larus philadelphia (Ord) differing from regressus in lacking dark anterior spots on the pterothorax.

Material examined: Larus delawarensis Ord

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H.</td>
</tr>
</tbody>
</table>

Q. punctatus sublingulatus was not found.

Material examined: Larus philadelphia (Ord)

<table>
<thead>
<tr>
<th>Location</th>
<th>Collection Date</th>
<th>Collector</th>
</tr>
</thead>
</table>

Q. punctatus sublingulatus was not found.
Quadraceps ravus (Kellogg, 1899)


Type host: *Actitis macularis* (Linnaeus)—Spotted Sandpiper.

A dark species, short and quite stout, lacking median longitudinal uncolored line across the first six or seven abdominal segments.

Measurements: *Quadraceps ravus* (Kellogg, 1899)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.40</td>
<td>.40</td>
</tr>
<tr>
<td>Head Width</td>
<td>.30</td>
<td>.31</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.19</td>
<td>--</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.30</td>
<td>--</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.72</td>
<td>--</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.40</td>
<td>.37</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.38</td>
<td>1.43</td>
</tr>
</tbody>
</table>

* from Kellogg (1899)

Material examined: *Actitis macularis* (Linnaeus)

No Locality No Date U. N. H. Coll.
Durham, N. H. Sept. 4, 1965 B. Barrett

The Durham, New Hampshire, collection yielded a single male *Quadraceps ravus*.

Material examined: Slides

Orono, Maine No Date Cornell Coll.
Quadraceps sellatus sellatus (Burmeister, 1838)

Type host: Sterna hirundo Linnaeus--Common Tern.

I have no data on this species of Mallophaga.

Material examined: Sterna hirundo Linnaeus

Newington, N. H. Aug. 30, 1965 B. Smith
Brunswick, Maine Aug. 20, 1965 H. Tyler
No Locality No Date U. N. H. Coll.

Quadraceps sellatus sellatus was not found.

Quadraceps similis (Giebel, 1866)

Type host: Tringa nebularis (Gunnerus).
New England host: Totanus melanoleucus (Gmelin)--Greater Yellowlegs.

An elongate Quadraceps with posterolateral angles of the pterothorax with two long and three short setae; three setae near the middle of the dorsal margin of the pterothorax. Abdominal pleurites narrow. Male genitalia distinctive, the parameres and endomerases are sharply elbowed and pointed (fig. 57).

Material examined: Totanus melanoleucus (Gmelin)
Three male and four female Quadraceps similis were collected from this bird.

Quadraceps strepsilaris (Denny, 1842)
Type host: Arenaria interpres (Linnaeus)—Ruddy Turnstone.

Preantennal region with four marginal hairs; trabeculae prominent; antennae short reaching two-thirds distance to the occipital margin, first three segments almost colorless, last two brown; temples with two long setae; dorsal anterior plate shield-shaped. Prothorax quadrangular; sides slightly diverging; posterolateral angle with one short seta. Pterothorax with widely diverging sides; posterolateral angles with three long setae. Abdomen elongate-elliptical; posterior angles of the segments slightly projecting; one or two setae in posterior angles; two long setae on the posterodorsal margins of the abdominal segments.

Material examined: Arenaria interpres (Linnaeus)

No Locality No Date U. N. H. Coll. (2 birds)
Hampton, N. H. Sept. 9, 1965 B. Barrett

The Hampton collection yielded one female and one immature Quadraceps which I was unable positively to place into this species and one male and one female Q. strepsilaris.
Material examined: Slides

Rye, N. H. Aug. 30, 1932 L. R. Nelson (USNM Slide)

**Quadraceps waterstoni** Hopkins and Timmermann, 1954

**Quadraceps waterstoni** Hopkins and Timmermann, 1954. Trans. R. Ent. Soc. London, 105: 143, fig. 9; pl. 2, figs. 11-12.

Type host: *Tringa solitaria* Wilson—Solitary Sandpiper.

A moderately narrow, very dark species. Lateral outlines of clypeus straight. Male with first abdominal tergite completely divided, second incised well beyond middle, third nearly to middle, IV-VI slightly divided, VII-VIII divided. Female abdominal tergite I divided, II-III deeply incised, IV-V divided to middle, VI-VII slightly incised.

Hopkins and Timmermann (1954) report this species from Massachusetts.

Material examined: *Tringa solitaria* Wilson

Hampton Falls, N. H. May 10, 1965 B. Barrett
Durham, N. H. Sept. 4, 1965 B. Barrett

The Hampton Falls collection yielded 3 male and 3 female *Q. waterstoni*; the Durham collection of September 4, 1965, yielded 2 male and 1 female *Q. waterstoni*. 
Measurements: *Quadraseps waterstoni* Hopkins and Timmermann

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.37</td>
<td>.40</td>
</tr>
<tr>
<td>Head Width</td>
<td>.24</td>
<td>.25</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.16</td>
<td>.18</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.22</td>
<td>.24</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.88</td>
<td>1.14</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.31</td>
<td>.34</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.50</td>
<td>1.80</td>
</tr>
</tbody>
</table>
RALLICOLA

Type species: Oncophorus bisetosus Piaget, 1880 (By subsequent designation, Hopkins and Clay, 1951, Checklist of Mallophaga: 317).

Type species: Oncophorus attenuatus (Burmeister, 1838) (A synonym of Rallicola ortygometrae Schrank, 1781).

Parricola Harrison, 1915. Parasitology, 8: 90.
Type species: Rallicola sulcatus Piaget, 1880.

Aptericoila Harrison, 1915. Parasitology, 8: 90.
Type species: Rallicola (Aptericoila) gadowi Harrison, 1915.

Type species: Furnaricola acutifrons Carriker, 1944.

Type species: Corvicola insulanus Carriker, 1949.

Type species: Epipicus scapanoides Carriker, 1949.

Head longer than wide, never with a complete carina around anterior margin; marginal carina interrupted laterally. Dorsal preantennal suture, when present, originating at distal end of marginal carina. Dorsal clypeal plate usually present and with rounded, flattened, or acuminate posterior margin but never produced into a thickened point posteriorly. Ventral carina always interrupted medially and extended forward and fused to distal end of marginal carina at each side. Temporal lobes slightly expanded; gular plate moderately well developed. Prothorax small, narrow and distinct from pterothorax, the latter with lateral margins divergent and posterior margin prolonged as a median point. Abdomen in both sexes elongate. Abdominal segments IX-X fused and not separated from segment XI by a
definite suture. Tergal plates IX-X continuous across the segment and only slightly narrowed medially. Female with edge of vulva set with fine setae; small spine-like setae and a tubercle on ventrolateral edge of segment IX bearing 1-3 long, stout hairs. Male genitalia with mesosome usually shorter than parameres and often a well sclerotized penis, with opening terminal or ventro-terminal, rarely dorso-terminal. Parameres varying in shape but always elongate.
Rallicola advenus (Kellogg, 1896)
Type host: Fulica americana Gmelin—American Coot.

A short stout species, with a short wide head. Hyaline margin of forehead not extended, broadly rounded; antennae sexually dimorphic, the male with the first antennal segment enlarged and elongated. Abdominal tergites II-VII in the female, and II-IV in the male, interrupted medially. Abdominal sternites III-VI in both sexes with six or seven medium length setae on the posterior margins.

Kellogg (1896) collected 1 male and 1 female in California. Osborn (1896) collected this species from a stuffed American Coot skin in Iowa. Peters (1936) reports it from Washington, D. C., Louisiana, and South Carolina. Emerson (1940) from Oklahoma, and Emerson (1955) from Iowa, Louisiana, New Mexico, and Kansas.

Measurements: Rallicola advenus (Kellogg, 1896) (from Emerson, 1955)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.33</td>
<td>.30</td>
</tr>
<tr>
<td>Head Width</td>
<td>.34</td>
<td>.40</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.23</td>
<td>.26</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.33</td>
<td>.35</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.20</td>
<td>1.40</td>
</tr>
</tbody>
</table>

Material examined: Fulica americana Gmelin

No Locality    No Date    U. N. H. Coll.

Rallicola advenus was not found.
**Rallicola kelloggi** Emerson, 1957


Type host: *Rallus limicola* Vieillot—Virginia Rail.

Head slender with wide hyaline margin. Antennae sexually dimorphic, the male with the first segment enlarged and elongate, bearing an appendage, the female antennae filiform. Posterior margin of pterothorax with four pairs of long setae. Abdominal tergite II of male interrupted medially. Abdominal tergites II-III of female interrupted medially and IV indented medially; each tergite with a pair of setae located medially on the posterior margin; sternites III-VI with four setae on the posterior margin; and sternites VII-VIII with two setae on the posterior margin.

Peters (1928) and Geist (1931) report this species from Ohio. Emerson (1957) reports collections from Maryland, Ohio, British Columbia, and New Jersey.

**Measurements:** *Rallicola kelloggi* Emerson, 1957

(from Emerson, 1954)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.42</td>
<td>.45</td>
</tr>
<tr>
<td>Head Width</td>
<td>.35</td>
<td>.36</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.21</td>
<td>.23</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.28</td>
<td>.30</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.26</td>
<td>1.42</td>
</tr>
</tbody>
</table>

**Material examined:**

I have collected neither *Rallus limicola* nor seen specimens of *Rallicola kelloggi*. 

**Rallicola mystax** (Giebel, 1874)

*Nirmus mystax* Giebel, 1874. *Insecta Epizoa: 301.

*Type host: Porzana porzana* Linnaeus.

*New England host: Porzana carolina* (Linnaeus)—Sora.

Head long and slender with a wide hyaline margin. Antennae sexually dimorphic, first segment of the male antenna enlarged and elongated with an appendage. Abdominal segment II with tergite sometimes divided, the other tergites transversely continuous in both sexes. Abdominal sternites III-VI with four long setae on the posterior margins.

There are two species of *Rallicola* found on the Sora; thus, all records published before 1957 when the second species was described must be questioned. Emerson (1957) reports this species from Idaho.

**Measurements:** *Rallicola mystax* (Giebel, 1874)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.37</td>
<td>.40</td>
</tr>
<tr>
<td>Head Width</td>
<td>.32</td>
<td>.35</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.18</td>
<td>.21</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.27</td>
<td>.30</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.30</td>
<td>1.30</td>
</tr>
</tbody>
</table>

Material examined: *Porzana carolina* (Linnaeus)

No Locality No Date U. N. H. Coll.

No *Rallicola mystax* (Giebel, 1874) were found.

The Entomology Department of the University of New Hampshire has a slide of a male *Rallicola mystax* from *Porzana carolina*, Wooster, Ohio, August 25, 1917, collected by P. R. Lowry.
**Rallicola ortygometrae californicus** (Kellogg and Chapman, 1899)  
**Oncopliorus bisetosus californicus** Kellogg and Chapman, 1899.  
Type host: *Rallus longirostris* Boddaert—Clapper Rail.  
Abdominal tergites II-VIII in the female, and II-III in the male; interrupted medially. Antennae similar in the two sexes (fig. 58).

Material examined: *Rallus longirostris* Boddaert  
Seabrook, N. H.  
May 10, 1965  
B. Barrett  
Thirteen male and nine female *Rallicola ortygometrae californicus* were collected from this bird.

**Rallicola ortygometrae subporzanae** Emerson, 1957  
Type host: *Porzana carolina* (Linnaeus)—Sora.  
This subspecies is very similar to the one above, except all tergites in both sexes are transversely continuous.

Measurements: *Rallicola ortygometrae subporzanae* Emerson  
*(from Emerson, 1957)*  

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.48</td>
<td>.44</td>
</tr>
<tr>
<td>Head Width</td>
<td>.38</td>
<td>.36</td>
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<tr>
<td>Prothorax Width</td>
<td>.22</td>
<td>.21</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.32</td>
<td>.32</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.43</td>
<td>1.51</td>
</tr>
</tbody>
</table>

Material examined: *Porzana carolina* (Linnaeus)  
No Locality  
No Date  

No Mallophaga were found.
RHYNONIRMUS

Type species: *Lipeurus infuscatus* Osborn, 1896.

Head variable in shape; strongly thickened along clypeal edge; signature indefinite though an irregular transverse clypeal suture is present; mouth parts unmodified; oral fossa remote, transverse, round-ed, oblong. Trabeculae distinct, not exceeding the first antennal joint, generally much shorter. Antennae variable in shape. Occipital edge nearly straight. Metathorax very wide angled posteriorly. First abdominal tergite with sides divergent; tergites transversely continuous, transparent near spiracles. Tergites II-VI meniscus shaped, and the intertergal membrane becomes strongly chitinized in fully adult specimens. Pleurites simple. Chaetotaxy, one dorsal and one ventral row. Male genitalia. Basal plate widest posteriorly. Mesosome triangular, shortly produced posteriorly; parameres excessively thin towards inner edge, and closely fitting the mesosome. The latter bears one pair of minute bristles on the wider portion, and three pairs apically. A sac is present.
**Rhynonirmus parsonae** Clay, 1961


Type host: *Philohela minor* (Gmelin)—American Woodcock.

Male with tergite II completely separated and with two terminal and two subterminal setae on distal end of "penis". Female with tergites II-V or VI deeply indented medially and VI or VII and sometimes VIII with a shallow notch (fig. 59).

Peters (1928) records this species from Ohio and Clay (1961) has examined 16 males and 28 females from Massachusetts.

Material examined: *Philohela minor* (Gmelin)

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee, N. H.</td>
<td>Oct. 6, 1963</td>
<td></td>
<td>G. L. Walker (3 birds)</td>
</tr>
<tr>
<td>Lee, N. H.</td>
<td>Oct. 6, 1963</td>
<td></td>
<td>G. L. Walker (2 birds)</td>
</tr>
<tr>
<td>Lee, N. H.</td>
<td>Nov. ?, 1963</td>
<td></td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Northwood, N. H.</td>
<td>Oct. 9, 1964</td>
<td></td>
<td>G. L. Walker (2 birds)</td>
</tr>
<tr>
<td>Barnstead, N. H.</td>
<td>Oct. 12, 1964</td>
<td></td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Lee, N. H.</td>
<td>Oct. 21, 1964</td>
<td></td>
<td>G. L. Walker</td>
</tr>
<tr>
<td>Lee, N. H.</td>
<td>Nov. 3, 1964</td>
<td></td>
<td>G. L. Walker (3 birds)</td>
</tr>
<tr>
<td>Lee, N. H.</td>
<td>Nov. 7, 1964</td>
<td></td>
<td>G. L. Walker (2 birds)</td>
</tr>
</tbody>
</table>

*Rhynonirmus parsonae* was not recovered.
Material examined: Slides

Kingston, R. I. June 25, 1962 A. Moorehouse
(U. R. I. Coll.)

The Rhode Island collection contains 9 male and 35 female

**Rhynonirmus parsonae.**

**Rhynonirmus scolopacis** (Denny, 1842)

*Nirmus scolopacis* Denny, 1842. *Mon. Anopl. Brit.*: 54 and 149,
pl. 2, fig. 6.

*Nirmus truncatus* Nitzsch, 1866 (*nec* Olfers, 1816). In *Giebel, Z.

*Lipeurus emarginatus* Piaget, 1880. *Les Pediculines*: 328, pl. 28,
fig. 2.

*Nirmus truncatus magnocephalus* Carriker, 1902. *J. N. Y. Ent.
Soc.*, 10: 218, pl. 20, fig. 4.

Type host: *Capella gallinago* (Linnaeus)—Common Snipe.

Carriker (1902) reports this species from Nebraska. I have not
collected this species and have no records of its collection in New
England.

**Measurements:** *Rhynonirmus scolopacis* (Denny, 1842)

(from Carriker, 1902)

Female

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.46</td>
</tr>
<tr>
<td>Head Width</td>
<td>.31</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.34</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.70</td>
</tr>
</tbody>
</table>
ROTUNDICEPS


Type species: Nirmus cordatus Osborn, 1896.

Head broadly rounded, slightly broader than long, only slightly buttressed marginally. Relatively strongly buttressed around the bases of the antennae and mandibular articulations. Signature only barely represented by small irregular sclerotized area. Posterior margin of head armed with short stout setae. Rounded, lightly sclerotized gular area. Posterior margin of pterothorax with complete although irregular row of long setae. Abdomen slightly longer than broad, lightly sclerotized without obvious delineation of tergites and sternites. Spiracles six, on morphological segments III-VIII. Mid-dorsal and mid-ventral double rows of setae on proximal seven segments. All spiracles except first and last with long setae posterior to each on border of tergite. In male, the first six tergites narrowed medially, with seventh separated into two parts, the eighth complete. Male genital opening dorso-terminal (fig. 60).
Rotundiceps cordatus (Osborn, 1896)


Type host: Limosa fedoa (Linnaeus)—Marbled Godwit.

This is the only known species in the genus. The Cornell University collection contains a slide of this species collected at Popham Beach, Phippsburg, Maine. I have been unable to collect the Marbled Godwit during the course of this study.
SAEUNDSSONIA

   Type species: Philopterus gonothorax Giebel, 1874.

   Type species: Docophorus alpinus Giebel, 1874 (A synonym of Docophorus tringae (O. Fabricius, 1780).

   Type species: Puffinoecus peusi Eichler, 1949.

Head large, longer than wide, forehead narrowed and flattened anteriorly with a hyaline margin and concave sides. Central anterior plate distinct, modified by internal thickening and with a posteriorly directed point. Carinae of head striking in appearance; temporal carinae passing from occipital margin of head across temples, continuous with temporal margin above well developed eyes. Ocular seta on ventral lens of each eye. Antennae filiform, similar in the two sexes; trabeculae large and well developed. Temporal lobes evenly expanded and rounded. Prothorax short, sides slightly diverging; pterothorax large, sides diverging; posterior margin broadly convex with a row of long setae transversely positioned. Abdomen broad with prominent sternal plates; sternite VII with posteriorly directed pointed process at each anterolateral angle. Parameres of male genitalia long, curved, rod-shaped.
Saemundssonia conica (Denny, 1842)

Docophorus conicus Denny, 1842. Mon. Anopl. Brit.: 45 and 90, pl. 5, fig. 2.

Docophorus fuliginosus hawaiiensis Kellogg and Chapman, 1902.

Philopterus wallacei Johnston and Harrison, 1912. Trans. N. Z. Inst., 44: 369, figs. 5-6.


Type host: Pluvialis apricaris (Linnaeus).

New England host: Charadrius vociferus Linnaeus—Killdeer.

Head longer than wide, with elongate concave-sided clypeus; evenly rounded temporal lobes, and slightly concave posterior margin.

Prothorax with sides diverging and hind margin slightly convex.

Pterothorax with posterolateral angles not truncated but acute, projecting posteriorly over the abdomen. Abdomen oval.

Material examined: Charadrius vociferus Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick, Maine</td>
<td>Sept. 4, 1964</td>
<td>H. Tyler</td>
</tr>
<tr>
<td>Rochester, N. H.</td>
<td>May 30, 1965</td>
<td>B. Smith</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 4, 1965</td>
<td>B. Barrett</td>
</tr>
<tr>
<td>Brunswick, Maine</td>
<td>Sept. 12, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

S. conica was not found.

A subspecies of Saemundssonia conica, S. conica naumanni is found on the Black-bellied Plover.

Saemundssonia conica naumanni (Giebel, 1874)

Docophorus naumanni Giebel, 1874. Insecta Epizoa: 100.


Type host: Squatarola squatarola (Linnaeus)—Black-bellied Plover.

Kellogg (1896) records this species from Kansas, and Peters (1936) from Massachusetts and New Hampshire.
Material examined: *Squatarola squatarola* (Linnaeus)

Brunswick, Maine Oct. 27, 1964 H. Tyler

*S. conica naumanni* was not found.

Material examined: Slides

Rye, N. H. Sept. 19, 1932 L. R. Nelson
(USNM Slide)

Measurements: *S. conica naumanni* (Giebel, 1874)
(from Kellogg, 1896)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.60</td>
<td>.65</td>
</tr>
<tr>
<td>Head Width</td>
<td>.53</td>
<td>.65</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.65</td>
<td>.90</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.62</td>
<td>2.00</td>
</tr>
</tbody>
</table>

"*Saemundssonia cordiceps* (Piaget, 1880)"

Docophorus cordiceps Piaget, 1880 (nec Giebel, 1874). Les Pediculines: 664, pl. 54, fig. 7.

Type host: *Arenaria interpres* (Linnaeus)--Ruddy Turnstone.

I have no information concerning this species of *Saemundssonia*.

Material examined: *Arenaria interpres* (Linnaeus)

<table>
<thead>
<tr>
<th></th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td></td>
<td>Sept. 9, 1965</td>
</tr>
<tr>
<td>Hampton, N. H.</td>
<td>Sept. 9, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

*Saemundssonia cordiceps* was not found.

*Saemundssonia haemastica* Carriker, 1956


Type host: *Limosa haemastica* (Linnaeus)--Hudsonian Godwit.
Carriker (1956) records this species from Nebraska and Kansas and states that this species differs from species of *Saemundssonia* collected from *Limosa lapponica*, Bar-tailed Godwit, and from *Limosa limosa*, Black-tailed Godwit, by a longer and narrower head (fig. 61). However, he gave no measurements from these two hosts for comparison.

Material examined: *Limosa haemastica* (Linnaeus)


One female and one immature *Saemundssonia haemastica* were collected.

Measurements: *S. haemastica* Carriker, 1956

<table>
<thead>
<tr>
<th></th>
<th>$&amp;$ Carriker, 1956</th>
<th>$&amp;$ Plum Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.67</td>
<td>.63</td>
</tr>
<tr>
<td>Head Width</td>
<td>.62</td>
<td>.61</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.35</td>
<td>.33</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.51</td>
<td>.49</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.90</td>
<td>.93</td>
</tr>
<tr>
<td>Total Length</td>
<td>2.09</td>
<td>2.02</td>
</tr>
</tbody>
</table>

*Saemundssonia lari lari* (O. Fabricius, 1780)


Type host: *Larus hyperboreus* Gurnerus--Glaucous Gull.

Other New England hosts:
- *Larus argentatus* Pontoppidan--Herring Gull.
- *Rissa tridactyla* (Linnaeus)--Black-legged Kittiwake.
In *S. l. lari* the tergal plates of abdominal segment II are joined medially in both sexes and the dorsal abdominal setae of the female do not form a continuous line across the segment, but occur only along the posterior margins of the tergal plates. In the male genitalia there is no sclerotized cross-bar at the distal end of the basal plate and the endomeral projections are fused medially.

Material examined: *Larus hyperboreus* Gunnerus

None.

In the M. C. Z. there is a vial which is supposed to contain Mallophaga from *Larus hyperboreus*, Rockport, Massachusetts, April 20, 1918. No Mallophaga were found.

Material examined: *Larus glaucoides* Meyer

None.

Material examined: *Larus marinus* Linnaeus


Five male and nine female *S. lari* were collected from this bird.

Material examined: Slides

Rye, N. H. Nov. 10, 1932 L. R. Nelson (USNM Slide)

Marshfield, Mass. Dec. 30, 1930 5 USNM Slides
Measurements: *S. lari* from *Larus marinus*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.60</td>
<td>.60</td>
</tr>
<tr>
<td>Head Width</td>
<td>.60</td>
<td>.66</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.33</td>
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<td>Pterothorax Width</td>
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<td>Abdomen Length</td>
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<td>1.02</td>
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<tr>
<td>Total Length</td>
<td>1.78</td>
<td>2.25</td>
</tr>
</tbody>
</table>

Peters (1936) records this species from the Great Black-backed Gull in Massachusetts and New Hampshire and Brimley (1938) from North Carolina.

Material examined: *Larus argentatus* Pontoppidan

Danvers, Mass. Aug. 19, 1964 Coll. ?
Rye, N. H. Aug. 23, 1964 F. Kruger
Malden, Mass. ? ?, 1965 Coll. ?

All birds were infested with *S. lari* except the collection from Rye, New Hampshire.

Material examined: Slides

Norwalk, Conn. May 6, 1928 USNM Slide
Norwalk, Conn. May 6, 1928 B. M. S. Coll.
N. Eastham, Mass. Jan. 12, 1932 M. Brown
(Cornell Coll.)
Cape Cod, Mass. Aug. 30, 1937 C. M. Herman
Oak Bluffs, Mass. Nov. 14, 1941 C. N. Smith
(Little Duck Isl., Maine No Date Cornell Coll.)
Measurements: *S. lari* from *Larus argentatus*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.58</td>
<td>.61</td>
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<tr>
<td>Head Width</td>
<td>.58</td>
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<td>Prothorax Width</td>
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<td>.52</td>
</tr>
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<td>Abdomen Length</td>
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<td>.93</td>
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<tr>
<td>Total Length</td>
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<td>1.92</td>
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</tbody>
</table>

Peters (1936) reports this species from Connecticut, Florida, Louisiana, Massachusetts, Maine, and South Carolina; Brimley (1938) from North Carolina; and Stirrett (1952) from Ontario.

Material examined: *Larus delawarensis* Ord

<table>
<thead>
<tr>
<th>No Locality</th>
<th>No Date</th>
<th>U. N. H. Coll.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*S. lari* was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Chatham, Mass.</th>
<th>April 15, 1936</th>
<th>USNM Slide</th>
</tr>
</thead>
</table>

Peters (1928) reports this species from Ohio and Brimley (1938) reports it from North Carolina.

Material examined: *Larus atricilla* Linnaeus

None.

The only report of this species appears to be by Peters (1936) recorded from Florida, Louisiana, Massachusetts, and South Carolina.

Material examined: *Rissa tridactyla* (Linnaeus)

None.
Material examined: Slides

Isleford, Maine Mar. 27, 1936 A. E. B.

Four males and seven females were collected.

Measurements: *S. lari* from *Rissa tridactyla*

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.55</td>
<td>.61</td>
</tr>
<tr>
<td>Head Width</td>
<td>.54</td>
<td>.63</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.31</td>
<td>.36</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.43</td>
<td>.51</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.72</td>
<td>.84</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.79</td>
<td>.93</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.59</td>
<td>1.83</td>
</tr>
</tbody>
</table>

*Saemundssonia laticaudata* (Rudow, 1869)


Type host: *Thalasseus sandvicensis* (Latham)--Sandwich Tern.

New England host: *Thalasseus maximus* (Boddaert)--Royal Tern.

Males of this species are characterized by the basal plate without a distal cross-bar; parameres greater than .20 mm. in length; mesosomal setae in a linear arrangement, occasionally clustered on one side; inner face of paramere head with a slight basal concavity; dorsal anterior plate .16-.18 mm. in width; 4-9 setae on margin of abdominal sternite VI. Females of *S. laticaudata* lack an emargination on the hyaline anterior margin of the head; thoracic sternal plate with setae only on the posterior margin; sternite VII with postero-lateral angles fused to subgenital plate; and width at temples greater
than .63 mm.

Material examined:  *Thalasseus maximus* (Boddaert)

Hampton, N. H.  Sept. 1, 1954  D. Dupee

One male and four female *S. laticaudata* were collected from this bird. The Royal Tern is rare in New England but is included here since the lice were collected in New Hampshire.

*Saemundssonia lockeyi* Clay, 1949


Type host: *Sterna vittata* Gmelin.

New England Host:

*Sterna paradisaea* Pontoppidan—Arctic Tern.

Male basal plate lacking a cross-bar; endomere with terminal, lightly sclerotized, evenly rounded process; parameres wider than those of *S. sternae*; length of paramere greater than .20 mm.; setae of mesosome in a clustered arrangement.

The females of *S. lockeyi* cannot be distinguished from those of *S. sternae* on the Common Tern or those infesting the Sandwich Tern and Sooty Tern.

Material examined: *Sterna paradisaea* Pontoppidan

No Locality  No Date  U. N. H. Coll. (4 birds)

*Saemundssonia lockeyi* was not found.

Material examined: Slides

Ship Isle, Maine  No Date  Cornell Coll.

*Saemundssonia melanocephalus* (Burmeister, 1838)


Type host: *Sterna albifrons* Pallas—Least Tern.
Males of this species are easily distinguished by the presence of a terminal, strongly sclerotized, tooth-like process on the endomere. In the females, the seventh sternite has the posterolateral angles fused to the subgenital plate; width at the temples is less than .62 mm. but more than .57 mm.; width of dorsal anterior plate .14 to .18 mm.

Ward (1955) reports this species from South Carolina.

Material examined: *Sterna albifrons* Pallas

None.

*Saemundssonia merguli* (Denny, 1842)

*Docophorus merguli* Denny, 1842. Mon. Anopl. Brit.: 42 and 72, pl. 3, fig. 7.

Type host: *Plautus alle* (Linnaeus)—Dovekie.

Head with large anterior hyaline margin not emarginate; dorsal anterior plate large, width .15 mm. Trabeculae large; antennae filiform, narrow, segments short. Pterothorax with 10 marginal dorsal setae. Abdomen ovoid; tergite II undivided. Male genitalia with narrow parameres, bladelike and slightly curved.

Peters (1936) reports this species from Massachusetts, New Hampshire, Pennsylvania, and South Carolina. Brimley (1938) reports it from North Carolina.

Material examined: *Plautus alle* (Linnaeus)

Durham, N. H. Dec. 7, 1962 Coll. ?

One female *S. merguli* was collected.
Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts Bay</td>
<td>Dec. 28, 1882</td>
<td>M. C. Z. Coll. USNM Slide</td>
</tr>
<tr>
<td>Osterville, Mass.</td>
<td>Nov. 11, 1932</td>
<td>O. L. Austin (USNM Slide)</td>
</tr>
<tr>
<td>N. Eastham, Mass.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Desert Isl., Maine</td>
<td>Dec. 3, 1934</td>
<td>A. E. B.</td>
</tr>
<tr>
<td>Bar Harbor, Maine</td>
<td>Nov. 24, 1937</td>
<td>A. E. B.</td>
</tr>
</tbody>
</table>

Measurements: *S. merguli*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.55</td>
<td>.60</td>
</tr>
<tr>
<td>Head Width</td>
<td>.45</td>
<td>.49</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.28</td>
<td>.31</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.36</td>
<td>.42</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.61</td>
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<td>.63</td>
<td>.81</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.45</td>
<td>1.86</td>
</tr>
</tbody>
</table>

*Saemundssonia platygaster* (Denny, 1842)


Type host: *Charadrius hiaticula* Linnaeus

New England hosts:

- *Charadrius semipalmatus* Bonaparte—Semipalmated Plover.
- *Charadrius melodus* Ord—Piping Plover.
- *Actitis macularia* (Linnaeus)—Spotted Sandpiper.
- *Tringa solitaria* Wilson—Solitary Sandpiper.
- *Totanus melanoleucus* (Gmelin)—Greater Yellowlegs.
- *Calidris canutus* (Linnaeus)—Knot.
Head conical; almost as long as wide; clypeus short, rounded anteriorly; dorsal anterior plate pyriform; temporal area rounded with three setae. Prothorax trapezoidal with two setae in each posterolateral angle. Pterothorax rounded posteriorly with five or six setae on each side of the mid-line on the dorsal posterior margin. Abdomen rounded, oval. Male genitalia with very long parameres.

Material examined: Charadrius semipalmatus Bonaparte

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick, Maine</td>
<td>Sept. 1, 1964</td>
<td>H. Tyler</td>
</tr>
<tr>
<td>Rye, N. H.</td>
<td>Sept. 4, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

S. platygaster was not found.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humrock Beach,</td>
<td>Oct. 4, 1923</td>
<td>B. M. S. Coll.</td>
</tr>
<tr>
<td>Rye, N. H.</td>
<td></td>
<td>(USNM Slide)</td>
</tr>
</tbody>
</table>

Material examined: Charadrius melodus Ord.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phippsburg, Maine</td>
<td>Sept. 18, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

S. platygaster was not found.

Material examined: Actitis macularia (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 4, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

S. platygaster was not found.

Material examined: Tringa solitaria Wilson

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton Falls, N. H.</td>
<td>May 10, 1965</td>
<td>B. Barrett</td>
</tr>
<tr>
<td>Durham, N. H.</td>
<td>Sept. 4, 1965</td>
<td>B. Barrett</td>
</tr>
</tbody>
</table>

S. platygaster was not found.
Material examined: *Totanus melanoleucus* (Gmelin)


*S. platygaster* was not found.

Material examined: *Calidris canutus* (Linnaeus)

Phippsburg, Maine Sept. 1, 1965 H. Tyler

*S. platygaster* was not found.

*Saemundssonia scolopacisphaeopodis scolopacisphaeopodis* (Schrank, 1803)


Type host: *Numenius phaeopus* (Linnaeus)—Whimbrel.

Head without emarginate hyaline margin. Prothorax with one long seta in each posterolateral angle; pterothorax with 18-24 long setae on the posterior margin and a lateral spine-like seta on each side.

Two meso- and two metasternal setae on the sternal plate. Abdomen with tergal plate II entire; III-XI divided medially.

Peters (1936) reports this species from Florida, Massachusetts, and South Carolina.

Material examined: *Numenius phaeopus* (Linnaeus)

Phippsburg, Maine Sept. 9, 1965 H. Tyler (3 birds)

One male and two female *S. s. scolopacisphaeopodis* were collected from these three birds.
Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newbury, Mass.</td>
<td>Sept. 13, 1921</td>
<td>A. B. Fuller</td>
<td>(2 USNM Slides)</td>
</tr>
<tr>
<td>Rye, N. H.</td>
<td>Sept. 9, 1933</td>
<td>L. R. Nelson</td>
<td>(USNM Slide)</td>
</tr>
</tbody>
</table>

Measurements: *S. s. scolopacisphaeopodis* (Schrank, 1803)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.66</td>
<td>.73</td>
</tr>
<tr>
<td>Head Width</td>
<td>.69</td>
<td>.85</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.52</td>
<td>.61</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.82</td>
<td>1.09</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.87</td>
<td>2.25</td>
</tr>
</tbody>
</table>

*Saemundssonia sternae* (Linnaeus, 1758)

*Nirmus formicatus* Olfers, 1816. *De Veget...*: 89.
*Docophorus 5-maculatus* Piaget, 1885. *Les Pediculines, Supplement*: 9, pl. 1, fig. 10.

Type host: *Sterna hirundo* Linnaeus—Common Tern.
Other New England host: *Sterna dougallii* Montagu—Roseate Tern.

Head with anterior hyaline margin flattened; dorsal anterior plate with anterior margin flattened or slightly concave, and projecting beyond point of fusion of internal and marginal bands. Pterothorax with 7-10 long setae on dorsal posterior margin, each side. Abdomen ovoid with tergal plates of segment II approximate or in contact medially, and joined together by well marked secondary sclerotization.

Ward (1955) reports this species from Virginia, Ohio, Louisiana, Minnesota, and Georgia.
Material examined: *Sterna hirundo* Linnaeus

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newington, N. H.</td>
<td>Aug. 30, 1965</td>
<td>B. Smith</td>
</tr>
<tr>
<td>No Locality</td>
<td>No Date</td>
<td>U. N. H. Coll.</td>
</tr>
<tr>
<td>Brunswick, Maine</td>
<td>Aug. 22, 1965</td>
<td>H. Tyler</td>
</tr>
</tbody>
</table>

The Greenland, New Hampshire, collection yielded 2 male *S. hirundo* sternae.

*Saemundssonia tringae* (O. Fabricius, 1780)


*Docophorus alpinus* Giebel, 1874. *Insecta Epizoa*: 105.

*Docophorus lari* Grube, 1851 (nec O. Fabricius, 1780).


Type host: *Erolia maratima* (Brünnich) -- Purple Sandpiper.

Other New England hosts:

- *Arenaria interpres* (Linnaeus) -- Ruddy Turnstone.
- *Calidris canutus* (Linnaeus) -- Knot.
- *Erolia melanota* (Vieillot) -- Pectoral Sandpiper.
- *Erolia minutilla* (Vieillot) -- Least Sandpiper.
- *Erolia alpina* (Linnaeus) -- Dunlin.
- *Ereunetes pusillus* (Linnaeus) -- Semipalmated Sandpiper.
- *Crocethia alba* (Pallas) -- Sanderling.

Head with dorsal anterior plate markedly concave on anterior margin. Tergal plates of abdominal segment II joined medially in both sexes and the dorsal abdominal setae do not form a continuous line across each segment, occurring only along the posterior margins of the tergal plates. Male genitalia with a sclerotized cross-bar at the distal end of the basal plate; endomeral projections fused medially.
Measurements: *Saemundssonia tringae* (O. Fabricius, 1780).
(from Clay and Hopkins, 1954)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.55</td>
<td>.62</td>
</tr>
<tr>
<td>Head Width</td>
<td>.51</td>
<td>.59</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.38</td>
<td>.47</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.65</td>
<td>.83</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.47</td>
<td>1.67</td>
</tr>
</tbody>
</table>

Material examined: *Erolia maratima* (Brünnich)
*S. tringae* was not found.

Material examined: Slides
Coast of N. H.  May 1, 1933  L. R. Nelson

Material examined: *Arenaria interpres* (Linnaeus)
Hampton, N. H.  Sept. 9, 1965  B. Barrett
*S. tringae* was not found.

Material examined: *Calidris canutus* (Linnaeus)
Phippsburg, Maine  Nov. 1, 1965  H. Tyler
*S. tringae* was not found.

Material examined: *Erolia melanotos* (Vieillot)
Brunswick, Maine  Sept. 13, 1965  H. Tyler
*S. tringae* was not found.

Material examined: *Erolia alpina* (Linnaeus)
S. tringae was not found.

Material examined: Slides

N. Eastham, Mass. Oct. 26, 1930 H. S. Peters (USNM Slide)
(K. C. Emerson Collection)

Rye, N. H. Oct. 2, 1933 L. R. Nelson (USNM Slide)

Material examined: Ereunetes pusillus (Linnaeus)

No Locality No Date U. N. H. Coll.

S. tringae was not found.

Material examined: Slides

Seabrook, N. H. Sept. 29, 1936 (USNM Slide)

Material examined: Crocethia alba (Pallas)

Rye, N. H. Sept. 4, 1965 B. Barrett

S. tringae was not found.

Saemundssonia sp.

Collections of this undescribed species were made from the Thick-billed Murre, Uria lomvia (Linnaeus).

Material examined: Uria lomvia (Linnaeus)

Kittery, Maine Jan. 26, 1964 Coll. ?

One male, two female, and three immature Saemundssonia sp. were collected from this bird.

Material examined: Slides

Bar Harbor, Maine Jan. 24, 1934 A. E. B.

One male, five female, and one immature Saemundssonia sp.
STRIGIPHILUS

Type species: Docophorus heterocerus Nitzsch, 1861 (nec Grube, 1851) (A synonym of Strigiphilus goniodicerus Eichler, 1949).

Type species: Philopterus cebrebrachys (Denny, 1842).

Type species: Docophorus rostratus Burmeister, 1838.

Head large; forehead irregularly rounded, with sides evenly rounded. Dorsal anterior plate undivided and extending anteriorly nearly to the front of the head; clypeal bands distinct, dark and extending to the margin of the head. Trabeculæ reduced, not reaching tip of first antennal segment in the majority of described species. Temporal lobes rounded, slightly expanded laterally. Prothorax short; pterothorax broader than basal segment of the abdomen. Abdomen variable, broad and stout in many species, usually deeply pigmented with prominent spiracles and distinct pleural plates, the latter with serrate posterior borders. Genitalia of male with long basal plate, fused endomeræ and short stubby free parameres. True penis absent. Members of this genus are parasitic upon birds of the order Strigiformes.
Strigiphilus acutifrons Emerson, 1961

Type host: Bubo virginianus (Gmelin)—Great Horned Owl.

Head longer than wide with narrow, long dorsal anterior plate bearing a caudally pointed projection and two angled projections on either side of the midline. Genital plate of male narrow and elongated with two long setae centrally in the anterior portion. Genital plate of female rectangular in shape with sparsely scattered small setae. Terminal abdominal segment of female bilobed.

Measurements: Strigiphilus acutifrons Emerson, 1961 (from Emerson, 1961)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.65</td>
<td>.70</td>
</tr>
<tr>
<td>Head Width</td>
<td>.57</td>
<td>.62</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.34</td>
<td>.38</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.51</td>
<td>.56</td>
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<tr>
<td>Abdomen Width</td>
<td>.82</td>
<td>.90</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.88</td>
<td>2.15</td>
</tr>
</tbody>
</table>

Material examined: Bubo virginianus (Gmelin)

None.

Material examined: Slides

Lincoln, Maine  Jan.–June, 1941  W. J. Clayton

Three male and three female Strigiphilus acutifrons Emerson, 1961.

Strigiphilus barbatus (Osborn, 1902)

Docophorus barbatus Osborn, 1902. Ohio Nat., 2: 201, pl. 14, fig. 1.


Type host: Asio otus (Linnaeus)—Long-eared Owl.
Head narrowed in front of antennae, the margin slightly concave; dorsal anterior plate long, narrow posteriorly; antennae small, similar in the two sexes. Prothorax quadrate with anterior angles rounded and posterior angles nearly rectangular; posterior margin slightly convex, with one long seta in each posterolateral angle. Abdomen elongate-oval.

Osborn described this species from the Rusty Blackbird collected in Nebraska. The host designation was in error as indicated by Emerson (1955b) who examined cotypes of this species which agreed with other material taken from Asio otus.

I have collected neither Strigiphilus barbatus nor its host during the course of this study.

Strigiphilus ceblebrachys (Denny, 1842)

Pediculus strigis O. Fabricius, 1780 (nec Pontoppida, 1763).
Fauna Groenlandica: 216.
Docophorus ceblebrachys Denny, 1842. Mon. Anopl. Brit.: 45 and 92, pl. 1, fig. 3.
Type host: Nyctea scandiaca (Linnaeus) -- Snowy Owl.

Head wider than long, flatly rounded in front. Dorsal anterior plate short and broad, wider than long, pointed posteriorly; eye with long seta arising dorsally; temporal carina darkly pigmented. Prothorax small, with a single long seta on each lateral margin; proster­nal plate with two long setae. Pterothorax with sixteen long setae on the posterior margin. Abdomen robust, with well marked pleural plates (fig. 62).

This is a common mallophagan on the Snowy Owl which has been re­ported from many localities; Wilson (1928) New York; Peters (1928) Ohio; Peters (1936) Maine and New Hampshire; Procter (1938) Maine;
Brimley (1939) North Carolina; Emerson (1940) Oklahoma; Brown and Wilk (1944) Alberta; Stirret (1952) and Judd (1953) Ontario; and Whitehead (1954) Quebec.

Material examined: *Nyctea scandiaca* (Linnaeus)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seabrook, N. H.</td>
<td>Nov. 6, 1964</td>
<td>R. Gilmore</td>
</tr>
</tbody>
</table>

The Seabrook, New Hampshire, collection yielded 665 *S. cebrebrachys*. This was the largest number of Mallophaga I collected from a single bird during the course of this study.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick, Maine</td>
<td>Nov. 12, 1926</td>
<td>A. O. Gross (USNM Slide)</td>
</tr>
<tr>
<td>Scituate, Mass.</td>
<td>Nov. 12, 1926</td>
<td>J. B. May (B. M. S. Coll.)</td>
</tr>
<tr>
<td>Middletown, Conn.</td>
<td>No Date</td>
<td>W. N. Rice (9 USNM Slides)</td>
</tr>
<tr>
<td>Branford, Conn.</td>
<td>No Date</td>
<td>Cornell Coll.</td>
</tr>
<tr>
<td>Little Compton, R. I.</td>
<td>No Date</td>
<td>Cornell Coll.</td>
</tr>
<tr>
<td>Hinsdale, N. H.</td>
<td>Feb. 19, 1939</td>
<td>L. R. Nelson (USNM Slide)</td>
</tr>
<tr>
<td>Lincoln, Maine</td>
<td>Nov. 16, 1937</td>
<td>A. E. B.</td>
</tr>
<tr>
<td>Lincoln, Maine</td>
<td>Nov. 27, 1937</td>
<td>A. E. B.</td>
</tr>
<tr>
<td>Lincoln, Maine</td>
<td>Dec. 7, 1937</td>
<td>A. E. B.</td>
</tr>
<tr>
<td>Lincoln, Maine</td>
<td>Oct. 14, 1941</td>
<td>A. E. B.</td>
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</table>
Measurements: **Strigiphilus ceblebrachys** (Denny, 1842)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.57</td>
<td>.63</td>
</tr>
<tr>
<td>Head Width</td>
<td>.64</td>
<td>.73</td>
</tr>
<tr>
<td>Prothorax Width</td>
<td>.36</td>
<td>.42</td>
</tr>
<tr>
<td>Pterothorax Width</td>
<td>.52</td>
<td>.63</td>
</tr>
<tr>
<td>Abdomen Length</td>
<td>.96</td>
<td>1.20</td>
</tr>
<tr>
<td>Abdomen Width</td>
<td>.88</td>
<td>.94</td>
</tr>
<tr>
<td>Total Length</td>
<td>1.84</td>
<td>2.20</td>
</tr>
</tbody>
</table>

**Strigiphilus cursor** (Burmeister, 1838)

- **Type host:** *Asio flammeus* (Pontoppidan)—Short-eared Owl.

**Strigiphilus nudipes** (Piaget, 1880)

- **Type host:** *Asio flammeus* (Pontoppidan)—Short-eared Owl.

I do not have any information concerning these two species of Mallophaga and have been unable to collect the Short-eared Owl.

Material examined: Slides

Middletown, Conn. Nov. 15, 1925 O. L. Austin, Jr. (USNM Slide)

A specimen of *S. cursor* (Burmeister, 1838).

**Strigiphilus oculatus** (Rudow, 1870)

- **Type host:** *Bubo virginianus* (Gmelin)—Great Horned Owl.
Head wider than *S. acutifrons* Emerson, 1961, with wide, stout dorsal anterior plate, pointed posteriorly. Temporal lobe with two setae. Abdominal chaetotaxy is less dense in *S. oculatus* than in *S. acutifrons*. Male genital plate triangular-shaped with the widest portion anterior. The male genitalia are similar but smaller in *S. cursor*.

Material examined: *Bubo virginianus* (Gmelin)

None.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wenham, Mass</td>
<td>Oct. 9, 1928</td>
<td>USNM Slide</td>
</tr>
<tr>
<td>Wenham, Mass</td>
<td>Oct. 9, 1928</td>
<td>M. S. B. Coll.</td>
</tr>
</tbody>
</table>

Strigiphilus otus Emerson, 1955b


Type host: *Otus asio* (Linnaeus)--Screech Owl.

Dorsal anterior plate with anterior margin indented and sharply pointed posteriorly. Hyaline margin wide. Prominent dorsal antennal sutures mid-way between antennae and the hyaline margin, each extending inward one-third width of head. Temples convexly rounded, each with two long setae; posterior margin of head bare. Prothorax with one long seta on each posterolateral angle. Pterothorax one-third as long as wide with six long median setae dorsally on the posterior margin, and three long setae on the posterolateral angles. Male and female approximately the same size.

Emerson (1955b) records this species from Arizona, Texas, New York, Maryland, Oregon, and British Columbia.
Material examined: *Otus asio* (Linnaeus)

No Locality  No Date  U. N. H. Coll.

*Strigiphilus otus* was not found.

*Strigiphilus varius* Carriker, 1958


Type host: *Strix varia* Barton—Barred Owl.

Head longer than wide with premarginal carinae submarginal posterior to the clypeal suture; lateral margins of head, anterior to the antennae are undulating. Prothorax wider than long with a long seta in each posterolateral angle; pterothorax with eight long setae centrally on the dorsal posterior margin. Abdomen with narrow pleurites.

Carriker (1958) reports this species from Indiana.

Measurements: *Strigiphilus varius* Carriker, 1958

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
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</thead>
<tbody>
<tr>
<td>Head Length</td>
<td>.50</td>
<td>.55</td>
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<tr>
<td>Head Width</td>
<td>.45</td>
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<td>Prothorax Width</td>
<td>.28</td>
<td>.30</td>
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<tr>
<td>Pterothorax Width</td>
<td>.45</td>
<td>.46</td>
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<tr>
<td>Abdomen Length</td>
<td>.89</td>
<td>1.23</td>
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<tr>
<td>Abdomen Width</td>
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<tr>
<td>Total Length</td>
<td>1.71</td>
<td>1.78</td>
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Material examined: *Strix varia* Barton

No Locality  No Date  N. H. Fish & Game Dept.

Northwood, N. H.  Oct. 11, 1965  A. H. Mason
York, Maine     Jan. 6-7, 1966  Mr. Law
Durham, N. H.   Feb. 21, 1966  G. Byers
Both the Northwood and Durham collections contained several male and female *Strigiphilus varius*.

Material examined: Slides

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Collector</th>
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<tr>
<td>Maine</td>
<td>May 1, 1895</td>
<td>F. B. Webster (USNM Slide)</td>
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<tr>
<td>Trenton, Maine</td>
<td>Nov. 15, 1934</td>
<td>A. E. B.</td>
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<tr>
<td>Acadia Nat. Park, Maine</td>
<td>Nov. 21, 1935</td>
<td>A. E. B.</td>
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</table>
STURNIDOECUS

Type species: Docophorus leontodon Mitzsch, 1818 (A synonym of Pediculus sturni Schrank, 1776).

Philopteridae with rather elongate, bluntly triangular head; clypeus rather narrow, truncate or slightly concave; clypeal signature distinct, broadly emarginate anteriorly, truncate posteriorly. Eyes protruding, with a short seta. Temporal lobes rounded, with a long seta at each posterolateral angle and two or three small setae along the dorsal margin between the temporal angle and eye. Posterior edge of occiput nearly straight, with no setae: occipital carinae distinct; antennae similar in the two sexes, second segment the longest, first and fifth of about equal length. Prothorax rectangular with a long setae near each posterolateral angle; pterothorax nearly as wide as head; sides divergent posteriorly. Abdomen elongate-oval in outline; abdomen of female more elongate than in male. Last abdominal segment of male slightly bilobed and abdominal setae sparse or absent. Male genitalia with broad basal plate; parameres club-shaped basally, narrowing in mid-portion with tips expanded and curving inward.
Sturnidoecus simplex (Kellogg, 1896)


Type host: Turdus migratorius Linnaeus—Robin.

Superficially like Philopterus, but the presence of an emarginate dorsal anterior plate places this mallophagan in the genus Sturnidoecus (fig. 63). Peters (1935) reports this species from Ohio, Delaware, Massachusetts, Florida, North Carolina and Virginia. Peters (1936), in addition to the above localities, reports this species from South Carolina.

Measurements: Sturnidoecus simplex (Kellogg, 1896)
(from Peters, 1935)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
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<tr>
<td>Head Length</td>
<td>.48</td>
<td>.51</td>
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<tr>
<td>Head Width</td>
<td>.45</td>
<td>.49</td>
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<tr>
<td>Thorax Length</td>
<td>.26</td>
<td>.30</td>
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<tr>
<td>Thorax Width</td>
<td>.41</td>
<td>.44</td>
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<td>Abdomen Length</td>
<td>.75</td>
<td>.99</td>
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<td>Total Length</td>
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<td>1.80</td>
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Material examined: Turdus migratorius Linnaeus

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<th>Collector(s)</th>
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<tr>
<td>Hopkinton, N. H.</td>
<td>Apr. 24, 1964</td>
<td>J. E. K.</td>
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<td>Derry, N. H.</td>
<td>May 7, 1964</td>
<td>J. E. K.</td>
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<td>Epping, N. H.</td>
<td>May 13, 1964</td>
<td>J. E. K.</td>
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<tr>
<td>Dover, N. H.</td>
<td>Sept. 18, 1964</td>
<td>J. E. K.</td>
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</table>

(2 birds)
Durham, N. H. Oct. 6, 1964 J. E. K. (7 birds)
Plaistow, N. H. Apr. 23, 1965 J. E. K.
Durham, N. H. May 5, 1965 R. M. Reeves
Durham, N. H. Sept. 29, 1965 J. E. K.

I recovered 2 male and 11 female Sturnidoecus simplex from the
from the Robin collected at Plaistow, New Hampshire. All other col­
collections proved to be negative for this species.

Material examined: Slides

Bar Harbor, Maine June 1, 1938 A. E. B. (1 ♂, 4 ♀)
Groton, Mas. June 9, 1938 W. P. Wharton
Durham, N. H. Apr. 19, 1948 E. O. Hooghkirk
(USNM Slide)

Sturnidoecus sturni (Schrank, 1776)
Pediculus sturni Schrank, 1776. Beytr. Naturgesch.: 118, pl. 5,
figs. 11-14.
(nn for P. sturni Schrank, 1776).
Docophorus ostralegi Denny, 1842. Mon. Anopl. Brit.: 42 and 74,
pl. 5, fig. 4.
Type host: Sturnus vulgaris Linnaeus—Starling.

I have examined 59 Starlings from various localities in New
England without finding this species of Mallophaga. I have no infor­
mation concerning S. sturni and could find no records of its occur­
rence in New England. It appears to be uncommon on the Starling.
### PERCENTAGE INFESTATION OF NEW ENGLAND BIRDS BY MALLOPHAGA

<table>
<thead>
<tr>
<th>ORDER</th>
<th>INDIVIDUALS EXAMINED</th>
<th>INDIVIDUALS PARASITIZED</th>
<th>PERCENTAGE INFESTATION</th>
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<tr>
<td>GAVIIFORMES</td>
<td>4</td>
<td>1</td>
<td>25.0</td>
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<td>PODICIPEDIFORMES</td>
<td>4</td>
<td>1</td>
<td>25.0</td>
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<td>PROCELLARIIFORMES</td>
<td>7</td>
<td>6</td>
<td>85.7</td>
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<td>PELECANIFORMES</td>
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<td>100.0</td>
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<td>CICONIIFORMES</td>
<td>10</td>
<td>3</td>
<td>30.0</td>
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<tr>
<td>ANSERIFORMES</td>
<td>120</td>
<td>84</td>
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<tr>
<td>FALCONIFORMES</td>
<td>40</td>
<td>31</td>
<td>77.5</td>
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<td>GALLIFORMES</td>
<td>35</td>
<td>19</td>
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<td>CHARADRIIFORMES</td>
<td>176</td>
<td>109</td>
<td>61.9</td>
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<td>COLUMBIFORMES</td>
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<tr>
<td>CUCULIFORMES</td>
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<td>STRIGIFORMES</td>
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<tr>
<td>APODIFORMES</td>
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<td>7</td>
<td>53.8</td>
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<td>CORACIIFORMES</td>
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<td>2</td>
<td>66.6</td>
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<tr>
<td>PICIFORMES</td>
<td>24</td>
<td>12</td>
<td>50.0</td>
</tr>
<tr>
<td>PASSERIFORMES</td>
<td>585</td>
<td>220</td>
<td>37.6</td>
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**TOTALS**  
1,102 553 50.1

This percentage infestation agrees quite closely with the results obtained by Geist (1935) who, over a five year period, collected 1,025 birds, 470 were infested with Mallophaga giving a percentage infestation of 56.0.
HOST-MALLOPHACA INDEX OF GENERA FOUND IN NEW ENGLAND

GAVIIFORMES

Genus Craspedonirmus (Found only on this order).

PODICIPEDIFORMES

Genus Aquanirmus (Found only on this order).
Genus Laemobothrion
Genus Pseudomenopon

PELECANIFORMES

Genus Eidmaniella (Found only on this order).
Genus Pectinopygus (Found only on this order).
Genus Piagetiella (Found only on this order in the throat pouch).

CICONIIFORMES

Genus Ardeicola (Found only on this order and rarely collected).
Genus Ciconiphilus

ANSERIFORMES

Genus Acidoproctus (Found only on this order and rarely collected).
Genus Anaticola (Found only on this order).
Genus Anatoecus (Found only on this order).
Genus Ciconiphilus
Genus Holomenopon (Found only on this order).
Genus Ornithobius (Found only on swans, geese, and brants).
Genus Trinoton (Found only on this order).

FALCONIFORMES

Genus Colpocephalum
Genus Craspedorrhynchus (Only on the family Accipiteridae).
Genus Cuculophilus
Genus Degeeriella (Found only on this order).
Genus Falcolipeurus (Found only on this order).
Genus Kurodaia
Genus Laemobothrion
GALLIFORMES

Genus *Amyrisidea* (Found only on this order).
Genus *Chelopistes* (Found only on the turkey in New England).
Genus *Cuculotogaster* (Found only on the chicken in New England).
Genus *Goniocotes* (Found only on this order).
Genus *Goniodes* (Found only on this order).
Genus *Lagopoeucus* (Found only on this order).
Genus *Lipeurus* (Found only on this order).
Genus *Menacanthus*
Genus *Menopon* (Found only on the chicken in New England.
Genus *Oxylipeurus* (Found only on this order).

GRUIFORMES

Genus *Fulicoffula* (Found only on this order).
Genus *Incidifrons* (Found only on this order).
Genus *Laemobothrion*
Genus *Pseudomenopon*
Genus *Rallicola* (Found only on this order).

CHARADRIIFORMES

Genus *Actornithophilus* (Found only on this order).
Genus *Austromenopon*
Genus *Carduiceps* (Found only on the family Scolopacidae).
Genus *Cummingsiella* (Found only on the family Scolopacidae).
Genus *Lunaceps* (Found only on this order).
Genus *Quadraceps*
Genus *Rhynonirmus* (Found only on the family Scolopacidae).
Genus *Rotundiceps* (Found only on the Marbled Godwit).
Genus *Saemundssonia*

COLUMBIFORMES

Genus *Bonomiella* (Found only on this order and very rare).
Genus *Campanulotes* (Found only on this order).
Genus *Colpocephalum*
Genus *Columbicola* (Found only on this order).
Genus *Hohorstiella* (Found only on this order and uncommon).
Genus *Physconelloides* (Found only on this order).

CAPRIMULGIFORMES

Genus *Mulcticola* (Found only on the family Caprimulgidae).

CUCULIFORMES

Genus *Cuculicola* (Found only on this order).
Genus *Cuculiphilus*
Genus *Cuculoecus* (Found only on this order).
STRIGIFORMES

Genus Colpocephalum
Genus Kurodaia
Genus Strigiphilus (Found only on this order).

APODIFORMES

Genus Dennyus (Found only on the family Apodidae).
Genus Eureum (Found only on the family Apodidae and very rare).
Genus Trochiloeetes (Found only on the family Trochilidae).

CORACIIFORMES

Genus Quadraceps

PICIFORMES

Genus Brüelia
Genus Menacanthus
Genus Penenirmus
Genus Picicola

PASSERIFORMES

Genus Brüelia
Genus Colpocephalum (Found only on the family Corvidae).
Genus Machaerilaemus (Found only on this order and uncommon).
Genus Menacanthus
Genus Myrsidea (Found only on this order).
Genus Penenirmus
Genus Philopterus (Found only on this order in New England).
Genus Picicola
Genus Ricinus (Found only on this order in New England).
Genus Sturnidoecus (Found only on this order).
# List of Illustrations

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Laemobothrion atrum</em> (Nitzsch), head of $\sigma$.  (Ventral).</td>
<td>342</td>
</tr>
<tr>
<td></td>
<td>After Clay and Hopkins (1960).</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td><em>Actornithophilus hoplopteri</em> Carriker, $\sigma$.  (Ventral).</td>
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<tr>
<td></td>
<td>Total Length 1.90 mm.</td>
<td></td>
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<td>3.</td>
<td><em>Amyrsidea megalosoma</em> (Overgaard), head of $\sigma$.  (Dorsal).</td>
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<td></td>
<td>After Overgaard (1943)</td>
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<td>4.</td>
<td><em>Austromenopon phaeopodis</em> (Schrank), $\Omega$.  (Ventral).</td>
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<td>Total length 1.90 mm.</td>
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<td>5.</td>
<td><em>Bonomiella columbae</em> Emerson, $\Omega$.  (Ventral). Total</td>
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<td></td>
<td>length 1.73 mm.</td>
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<td><em>Ciconiphilus decimfasciatus</em> (Boisduval and Lacordaire), $\Omega$.</td>
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<td></td>
<td>(Ventral). Total length 1.85 mm.</td>
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<td>7.</td>
<td><em>Colpocephalum foetens</em> (Eichler), $\Omega$.  (Ventral). Total</td>
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<td></td>
<td>length 1.93 mm.</td>
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<td>8.</td>
<td><em>Cuculiphilus alternatus</em> (Osborn), $\sigma$.  (Ventral). Total</td>
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<tr>
<td></td>
<td>length 1.85 mm.</td>
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<tr>
<td>9.</td>
<td><em>Dennyus dubius</em> (Kellogg), $\Omega$.  (Ventral). Total length 2.62 mm.</td>
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<tr>
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<td><em>Eidmaniella</em> sp., $\sigma$.  (Ventral). Total length 1.62 mm.</td>
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<td>12.</td>
<td><em>Hohorstiella lata</em> (Piaget), $\sigma$.  (Ventral). Total length 1.61 mm.</td>
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<td>13a.</td>
<td><em>Holomenopon</em> sp., $\sigma$.  (Ventral). Total length 1.56 mm.</td>
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<td>13b.</td>
<td><em>Holomenopon</em> sp., $\sigma$.  Prosternal plate. Total length 0.06 mm.</td>
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<td>14.</td>
<td><em>Kurodaia magna</em> Emerson, $\sigma$.  (Ventral). Total length 1.96 mm.</td>
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<td><em>Machaerilaemus maestus</em> (Kellogg and Chapman), $\Omega$.  (Ventral). Total</td>
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<tr>
<td></td>
<td>length 1.54 mm.</td>
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<td>Figure</td>
<td>Description</td>
<td>Total length (mm)</td>
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<tr>
<td>--------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------</td>
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<tr>
<td>16</td>
<td><strong>Menacanthus colaptis</strong> (Durrant), ♂ (Ventral)</td>
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<td>17</td>
<td><strong>Menopon gallinae</strong> (Linnaeus), ♂ (Ventral)</td>
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<td>18</td>
<td><strong>Myrsides interrupta</strong> (Osborn), ♂ (Ventral)</td>
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<td>19</td>
<td><strong>Piagetiella</strong> sp., ♀ (Ventral)</td>
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<td><strong>Pseudomenopon qadrii</strong> Eichler, ♀ (Ventral)</td>
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<tr>
<td>21</td>
<td><strong>Trinoton anserinum</strong> (J. C. Fabricius), ♂ (Ventral)</td>
<td>1.00</td>
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<tr>
<td>22</td>
<td><strong>Ricinus arcuatus</strong> (Kellogg and Mann), ♂ (Ventral)</td>
<td>2.79</td>
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<tr>
<td>23</td>
<td><strong>Trochilocetes lineatus</strong> (Osborn), head of ♂ (Ventral)</td>
<td>0.44</td>
</tr>
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<td>24</td>
<td><strong>Acidoproctus kelloggi</strong> (Carriker), Head of ♂ (Ventral)</td>
<td></td>
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<tr>
<td>25</td>
<td><strong>Anaticola crassicornis</strong> ssp., ♂ (Ventral)</td>
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<td>26a</td>
<td><strong>Anatoecus icterodes</strong> ssp., ♂ (Ventral)</td>
<td>1.34</td>
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<td>26b</td>
<td><strong>Anatoecus dentatus</strong> ssp., ♂ genitalia</td>
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<td>27</td>
<td><strong>Aquanirmus bucomfishi</strong> Edwards, ♀ (Ventral)</td>
<td>2.24</td>
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<td>28</td>
<td><strong>Ardeicola robusta</strong> Tuff, head of ♂ (Ventral)</td>
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<tr>
<td>29</td>
<td><strong>Bruelia ornitissima</strong> (Giebel), ♀ (Ventral)</td>
<td>1.89</td>
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<td>30</td>
<td><strong>Campanulotes bidentatus compar</strong> (Burmeister), ♂ (Ventral)</td>
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<td>31</td>
<td><strong>Carduiceps zonarius</strong> (Nitzsch), ♂ (Ventral)</td>
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<tr>
<td>32</td>
<td><strong>Chelopistes meleagris</strong> (Linnaeus), head of ♂ (Dorsal)</td>
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<td>33. <strong>Columbicola columbae</strong> (Linnaeus), <strong>♂</strong> (Ventral). Total length 2.21 mm.</td>
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<td>34. <strong>Craspedonirmus colyminus</strong> (Denny), head of <strong>♂</strong>. (Ventral). After Thompson (1940)</td>
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<td>35. <strong>Craspedorrhynchus aquillinus</strong> (Denny), <strong>♂</strong>. (Ventral). Total length 2.31 mm.</td>
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<td>36. <strong>Cuclotogaster heterographus</strong> (Nitzsch), <strong>♀</strong> (Ventral). Total length 2.31 mm.</td>
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<td>37a. <strong>Cuculicola</strong> sp., <strong>♀</strong>. (Ventral). Total length 1.92 mm.</td>
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<td>37b. <strong>Cuculicola</strong> sp., terminal abdominal segments of <strong>♂</strong>.</td>
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<td>39. <strong>Cummingsiella longirostricola</strong> (Wilson), head of <strong>♂</strong>. (Ventral). After Carriker (1947).</td>
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