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THE PARASITES OF BRITISH BIRDS AND MAMMALS.  
XXXIII\* THE INSECT ECTOPARASITES OF THE HOUSE SPARROW  
(*PASSER D. DOMESTICUS* L.)

BY GORDON B. THOMPSON

The house sparrow is, perhaps, the most familiar bird. It is seldom far from human habitations and is to be found everywhere from isolated cultivated lands to the large city centres.

In spite of the facts that it is such a common bird and that many specimens have been examined in the course of years, comparatively few ectoparasites have been recorded from it. Considerable numbers of fleas have, however, been recorded from its nests. The following is a list of the insect ectoparasites which I consider to be true parasites of this bird.—HIPPOBOSCIDAE: *Ornithomyia fringillina* Curt. MALLOPHAGA: *Menacanthus annulatus* (Gieb.), *Myrsidea quadrifasciata* (Piag.), *Brüelia subtilis* (Nitz.), *Philopterus fringillae* (Scop.). SIPHONAPTERA: *Ceratophyllus g. gallinae* (Sch.), *C. fringillae* (Walk.).

## I. Summary of Records

### HIPPOBOSCIDAE:

*O. fringillina* Curtis, the smaller of the two British species of *Ornithomyia* was first recorded by Southern (1938) who stated, "many [house sparrows] were trapped [on the Isle of May, vii.1936] and found to be infested by a bird fly (*Ornithomyia fringillina* Curtis) to the extent of half a dozen to each individual. As many as ten were produced by one unfortunate". I recorded it from Sutherland, Dornock, and Kent, Longfield, on the basis of three specimens collected from young birds (Thompson, 1940). O'Mahony (1949) and Williamson (1949) recorded *fringillina* from house sparrows trapped at Fair Isle during 1948 but incorrectly claimed the records to be 'a new host for the fly'. Edwards (1951) recorded from Fair Isle 'four birds had flies and one of these was infested with mites *Microlichus* sp.'. In 1953 and 1955 I recorded it from juvenile birds Yorks, Spurn Head, 14.viii.1950 and 27.viii.1952. In the same paper I recorded two puparia of what I took to be *fringillina* from a nest, Essex, Wickham Bishops, 29.xi.1950 and two puparia of *fringillina* from four nests, Bucks, Gerrards' Cross. I also have a record of a male taken from a house sparrow on Bardsey Is. (in the press).

*O. avicularia* (L.) has been recorded from house sparrows by Gibbs & Barraud (1908), Thompson (1940) and Beven (1956). I am not happy about the identification in the case of Gibbs and Barraud and Beven. Beven (1956) refers to a 'small specimen 5 mm. long . . . Morden, Surrey, 4.viii.1956'. In the case of the specimens recorded by me in 1940 it must be remembered they were collected from trapped birds and there was every opportunity for

\*Part XXXII appeared in 1957, *Ent. mon. Mag.*, 93:213-216.

an interchange of flies. Large numbers of the normal hosts (e.g. black birds) of *avicularia* were trapped at the same time. In 1955 I recorded 'three puparia (one empty) of *O. avicularia* Linn., in nest of *P. domesticus*, Essefield, 22.v.1952. Two adults emerged circa 4.vi.1952'.

The occurrence of puparia of *Stenopteryx hirundinis* (L.) in house sparrows' nests (Thompson, 1953) is attributable to the fact that the sparrow had taken over house martins' nests. I am of the opinion that the house sparrow is not the normal breeding host of *avicularia* and on the basis of the existing records it appears to be only a casual host for *fringillina*.

#### MALLOPHAGA:

Denny (1842) in his famous monograph on the British Anoplura recorded and figured only one species of bird-louse from the sparrow. He called it *Docophorus communis*. In 1937 I recorded the same species under the name *Philopterus subflavesens* (Geoff.), Yorkshire, Kirby Moorside, 14.iv.1937. Clay & Hopkins (1951) discussed the nomenclature of this species, erected neotypes (based on British specimens) and decided the correct name of this parasite should be *Philopterus fringillae* (Scopoli), 1772.

The species *Brüelia subtilis* (Nitz.) has not previously been recorded, but it is included in the second part of this paper.

In 1937 I recorded *Menacanthus annulatus* (Gieb.) from Norfolk and in my limited experience of examining the house sparrow this is the louse most frequently found.

Britten (1932) recorded *Myrsidea quadrifasciata* (Piag.) from Cheshire Great Budworth, 12.iii.1923.

Neumann (1912) described and figured a species, which he called *Liotheum scopularium*, 'D'après 1 ♂ et 2 ♀, pris sur *Passer domesticus*, à Tring (Angleterre), collection N. C. Rothschild'. It appears, however, from the figure to be a species of *Actornithophilus* and is probably a straggler from one of the Charadriiformes. Slater (1925) recorded specimens from a house sparrow, Somerset, Redhill, 10.i.1922 as Neumann's species.

#### SIPHONAPTERA:

*Ceratophyllus g. gallinae* (Schr.) has been recorded more frequently than *C. fringillae* (Walk.) from the nests of the house sparrow. It was first recorded from the nest of the house sparrow by Jenner & Bloomfield (1905) from Sussex, Guestling. Waterston (1909) recorded it from Clackmannanshire, Kennetpans (nr. Kincardine-on-Forth), 8-10.viii.1908; Fifeshire, St. Andrews, Wilberlea, 18.viii.1908; Berwickshire, Coldingham, 28.ix.1908 (200-300 collected). Bagnall (1921) recorded it from Co. Durham: Gibside, Winlaton, Fatfield and Penschaw. Britten (1920) recorded it from Cheshire, Rainow, Styal and Jeffery (1925) from Isle of Wight, Newport. Thompson (1937) recorded it from Oxford, 30.iii.1926 and 14.iii.1927. O'Mahony (1939, 1941) recorded it from north Co. Dublin and Co. Donegal, Inishtrahull. Allan (1950) found 37 ♂ 42 ♀ in a nest at Aberdeen, Pittodrie, 24.v and at Scotstown Moor, mid June. Rothschild (1952) summarised the records from various sources and gave a total of forty-six records from house sparrows' nests. The following localities were added to the existing ones: Rannoch, Carie; Argyllshire, Mull; Kincardineshire, Auchinblae; nr. Dalkeith, Gorebridge; Midlothian, Colinton; Staffordshire, Armitage; Glamorganshire, Penarth; Bedfordshire, Whipsnade; Herts, Tring; Surrey, Woking; Hants, Lyminster. George (1954) recorded it from Gloucestershire, Brockworth, 1.ii.1953 and Gloucester, 3.x.1953. Thompson (1955) recorded it from Kent, Tonbridge, 10.viii.1953.

All the records listed above refer to specimens obtained from nests. The following records refer to fleas taken from the bodies of house sparrows: Rothschild (1952), three specimens collected from three birds out of a total of thirty-five birds examined. George (1956) found one male, Gloucestershire, Podsmead 17.xi.1953.

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*C. fringillae* (Walk.) was described from specimens from a sparrow's nest in 1856. Taschenberg (1880) decided it was not a distinct species, but Theobald (1892) thought it might possibly be distinct. Rothschild (1903) decided, after examining long series of both sexes (from Herts., Tring), it was a distinct species and published a description with figures. Following this, Evans (1906) recorded it from nests, Berwickshire, Tantallon Castle, v.1905; Bloomfield (1908) from Sussex, Pevensey Castle, x.1907; Waterston (1910) from Kincardineshire, Auchinblae, 27.v.1909 and Berwickshire, Coldingham, vii-ix; Bagnall (1921) from Co. Durham, Winlaton, Fatfield & Penshaw; Jeffery (1923) from Isle of Wight; Hamm (1926), Thompson (1937) and Freeman (1939) from Oxford; George (1954) from Gloucester, 3.x.1953 and Brockworth, 1.ii.1953; Thompson (1955) from Cambridge, Trumpington, 9.iv.1949. I have an unpublished record of this flea from a house sparrow's nest, Surrey, Wallington, 29.viii.1950.

A third flea, *Dasypsyllus g. gallinulae* (Dale) has only been recorded from the house sparrow on a few occasions and these are all contained in Rothschild's (1952) paper: 1 ♂ Midlothian, Arniston, 28.v.1909; 4 ♂ 2 ♀ Sunderland, Southwick, Longwood, 25.vi.1910; 3 ♂, 2 ♀, Glamorgan-shire, Gower Peninsula, 23.v.1919—nest. It seems certain that the preference of this flea for nests nearer to the ground limits its occurrence in the house sparrow's nests.

A fourth species, *C. garei* Rothschild, has, as far as I am aware, been doubtfully recorded from the house sparrow on one occasion by Rothschild (1952), and Boyd (1922) recorded it from 'sparrow'. This flea shows a marked preference for open nests on the ground, situated in damp places, which eliminates the house sparrow as a normal host.

One specimen of *Frontopsylla (Orfrontia) laeta* (J. & R.) was found by Dunnet & Allen (1955) on a house sparrow shot in a cave at Aberdeenshire, Newtonhill, 14.iii.1953 in the course of the work on the flea populations of house martins' nests in N.E. Scotland. The house martin is the normal host of this flea.

Matheson (1936) recorded *Ctenophthalmus nobilis* s.l. from 'sparrow' Glamorgan, Penarth. This is a mammal flea.

Although the sparrow frequently occupies disused house martins' nests the fleas found in the sparrows' nests are not those of the house martin.

The house sparrow generally builds its nest in or on a building of some kind or in creeper on walls, trees or hedges close to houses. The untidy nest consisting of grass, straw, etc., lined with feathers, wool, etc., is usually colonial and situated over five feet from the ground. The nest may be classified ecologically as a dry nest and for this reason and the long nesting season from April to August during which up to three broods may occur, *C. gallinae* is afforded every opportunity to breed successfully under conditions which appear to suit it admirably.

The dusting habits of the house sparrow coupled with the fact that a considerable amount of fine dust is always present in the nest may contribute substantially towards keeping down the mallophagan parasites. It has been suggested that dust baths have insecticidal value.

## 2. A collection of ectoparasites from trapped sparrows

I was prompted to prepare these notes as a result of correspondence with Mr. D. Summers-Smith who has been trapping house sparrows for many years in connection with his studies on this bird. Mr. Summers-Smith has very kindly sent me the details of his ectoparasite captures and I should like to take this opportunity of thanking him for all his kindness.

Table I gives an analysis of the total number of birds examined each month and of the number of different species of ectoparasites found on each bird.

TABLE I—Parasites collected from house sparrows

	1954	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
No. of birds examined	1954	—	—	—	—	—	—	—	—	—	5	4	3	12
	1955	2	—	3	—	21	17	11	—	—	—	—	—	—
	1956	—	—	—	5	20	43	18	3	8	28	5	2	100
	1957	2	5	—	—	—	—	—	16	3	5	—	—	118
No. of fleas collected	1955	—	—	—	—	1g (1)	1g (1)	—	1f (1)	1 (1)	—	—	—	4
	1956	—	—	—	—	—	4f (4)	—	2f (1)	—	—	—	—	—
	1957	—	—	1 (1)	—	—	—	—	3g (3)	1g (1)	—	—	—	10
No. of lice collected	1955	—	—	—	—	1B (1)	60? (1)	—	—	—	2M (2)	—	—	60?
	1956	—	—	—	—	5B (5)	1M (1)	—	—	—	—	—	—	3M=64
No. of flatflies collected:	1955	—	—	—	—	—	—	1P (1)	—	—	—	—	—	1P
	1956	—	—	—	—	—	—	1B (1)	—	—	9M (1)	—	—	1P
	1957	—	—	—	—	—	—	—	—	—	—	—	—	6B=16
														9M

Key to symbols: B, *B. subtilis*; f, *C. fringillae*; g, *C. g. gallinae*; M, *M. annulatus*; O.f., *O. fringillina*; P, *Philoaterus* sp. Figures in parenthesis indicate the number of birds from which parasites were obtained.

The chloroform vapour technique was used to obtain the parasites and it may be assumed to be one hundred per cent. effective in obtaining fleas and flat-flies, but in regard to the lice it is not very effective. The number of lice given in the table cannot therefore be regarded as the total louse population of any one bird, but they do give some indication of infestation.

Woodman and Dicke (1954) published the results of an examination of 391 house sparrows\* to determine seasonal fluctuations of a mallophagan parasite upon this bird in Wisconsin. The birds were collected by shooting and the lice were removed by placing the sparrows in bags containing a pad saturated with chloroform or ether. After five to ten minutes the body was removed and the feathers were manually roughed over a sheet of white paper. It may be said therefore that this technique for collecting the lice was rather more thorough than that used by Mr. Summers-Smith. A total of 1,290 mallophagan parasites was obtained from 217 birds. The approximate average number of mallophaga per infested host for the year was six per bird and 55.5% of the sparrows were infested. Statistically significant differences in mallophagan populations were indicated between the months of May and June. Woodman & Dicke stated, 'This increase may be correlated to the change in habits of the birds during the time of maximum nesting activity'. Although not a fair comparison the figures presented in the present paper show the total number of birds examined—237; number of birds infested—13 (= 5.5%) total number of lice—80, average number of lice per infested bird—6. The fact that the average number of lice per infested bird is the same in both cases has little significance. Incidentally, *Brüelia vulgata* (Kell.) is the name given to the species on which Woodman & Dicke's figures are based but I cannot say if this is the same as *B. subtilis* (Nitz.). *Menacanthus annulatus* (Gieb.) was also found by Woodman and Dicke on ten sparrows during October and November but their apparent absence throughout the remainder of the year is unexplained.

### 3. Transmission of ectoparasites by house sparrows

The sparrow has often been suspected as a disseminator of ectoparasites but there has been no evidence of this in the British Isles. Hoyle (1938) contributed some interesting evidence on the transmission of poultry parasites by sparrows in Kansas. *Cuculotogaster heterographus* (Nitz.), a true poultry louse, was found on the sparrow in nature and the same species,

\* The house sparrow was introduced into the U.S.A. from Europe in 1850.

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when placed on a sparrow, was able to live for nine days which period would be long enough to effect transmission to chickens. Eight parasite-free sparrows became infested with chicken lice by contact with chickens or through dust baths on three different occasions. It would be of considerable interest to examine sparrows in the vicinity of chicken runs in the British Isles. XX

Mr. Summers-Smith has made considerable collections of mites from the sparrows recorded in the table but of all the parasites collected by the chloroform vapour method I would say the mites are the least likely to represent the true picture of the total number occurring on the birds. The determinations of the mites are still awaited.

I wish to make acknowledgements, on behalf of Mr. Summers-Smith, to Miss T. Clay for determining the Mallophaga and to Mr. F. G. A. M. Smit for determining some of the fleas.

In conclusion it seems the house sparrow is relatively free from insect ectoparasites on the evidence of the published records and an examination of 237 birds.

## APPENDIX

The house sparrow has been listed among the hosts of the larvae of the Dipterous flies *Protocalliphora azurea* (Fall.) and *Neottiophilum praestum* (Meig.), but from the published information it is by no means commonly parasitised.

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Note: The references to the flea records may be found in Smit, 1957, *Ent. Gaz.*, 8:66-75

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13 Braybrooke Road, Church End, Cherry Hinton, Cambridge.  
May 10th, 1957.

Five species of Ants (Hym., Formicidae) inhabiting the same nest.—On May 1st, 1954, on Hurn Heath, near Christchurch, Hants, I found a nest of *Formica sanguinea* Latr. which had present, besides its usual slave, *Formica fusca* L., some workers of *Myrmica scabrinodis* Nyl. var. *sabuleti* Mein. Beneath a stone within the perimeter of the nest was a colony of *Tetramorium caespitum* (L.). Running about in company with the workers of the last-named species were some workers of *Strongylognathus testaceus* (Schrenck) (=diveri Don.).—S. C. S. BROWN, 454 Christchurch Road, Bournemouth, Hants: July 11th, 1957.