

Arthropod Parasites on the Starling, *Sturnus vulgaris* L., in Southwest Virginia¹

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ABSTRACT

One hundred starlings were collected and examined for ectoparasites between May 22, 1964, and May 4, 1965. Fifteen species of insects (2 Collembola, 1 Psocoptera, 2 Mallophaga, 2 Thysanoptera, 4 Homoptera, 1 Coleoptera,

and 3 Diptera) and 22 species of Acarina were collected. One of the Acarina, *Dermatophagoides (Sturnophagoides) bakeri* Fain, was new to science.

Because of the relationship of avian hosts and in-

sect vectors to diseases affecting humans and animals, a survey was undertaken to determine the ectoparasites present on a common pest bird in southwest Virginia. Starlings were suitable hosts for this survey, since they are present at all seasons in the Appala-

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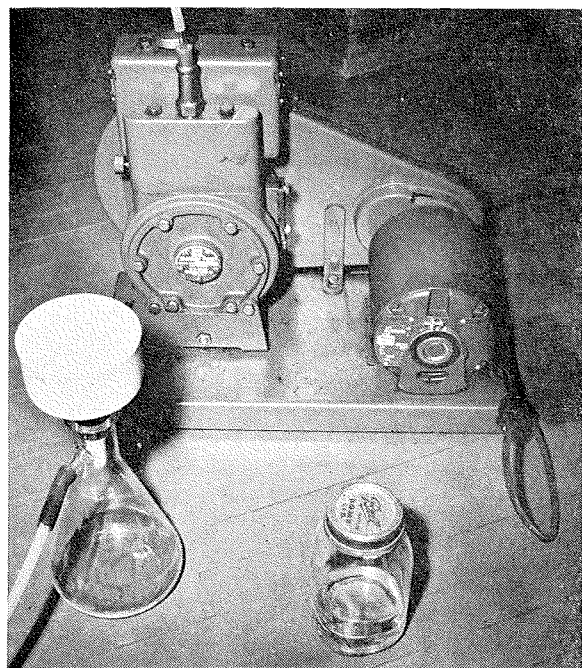


FIG. 1.—Büchner funnel attached to vacuum pump to facilitate filtration of alcohol wash.

chian regions of Virginia; and their gregarious nature and nesting habits allowed ample opportunity for interchange of parasites.

Boykin² (1954) found 3 species of ectoparasites on the starling in South Carolina. These were the Sarcophagid mite, *Trouessartia rosteri*, and 2 lice, *Menacanthus spinosus* and *Bruelia nebulosa*. Boyd (1951) reported a total of 16 species of ectoparasites from the starling: 9 Acarina, 4 Mallophaga, 2 Siphonaptera, and 1 Diptera.

MATERIALS AND METHODS.—One hundred starlings were collected, by shooting, from May 22, 1964 to May 4, 1965. The collections were made in pasture fields in 3 southwest Virginia counties: Montgomery, Pulaski, and Wythe. Immediately after a bird was shot, it was put into a polyethylene plastic sandwich bag and the opening was sealed with wire to prevent escape of ectoparasites. The birds were stored in a freezer at -14.5°C until they could be examined.

At least 6 hr before processing for ectoparasites the birds were removed from the freezer for thawing. Each was put into a 1-qt mason jar containing about a pint of 95% ethyl alcohol. The jar was shaken by hand for 2-min and then the liquid was filtered with a 9-cm Büchner funnel assembly attached to a 1-liter Erlenmeyer flask. A sheet of Whatman no. 1 filter paper was placed in the funnel, and a vacuum pump was attached to the assembly to facilitate filtration (Fig. 1). The filtered alcohol was then removed, returned to the mason jar, and the bird was shaken a 2nd time for 1 min. Filtration was repeated and the bird was discarded.

After the parasites were collected on filter paper they were removed and stored in labeled vials. Sorted

Table 1.—Parasites and other arthropods found on starlings in southwest Virginia, 1964–65. Those marked with an asterisk (*) are parasitic on starlings.

INSECTA	
COLLEMBOLA	
Entomobryidae	
<i>Orchesella ainsliei</i> Folsom; det. D. L. Wray ^a	
Sminthuridae	
<i>Deuterosminthurus repandus</i> Agren; det. D. L. Wray	
PSOCOPTERA	
Undet. sp.	
MALLOPHAGA	
Menoponidae	
* <i>Menacanthus mutabilis</i> Blagoveshtschensky; det. K. C. Emerson ^a	
* <i>Bruelia nebulosa</i> (Burmeister); det. K. C. Emerson	
THYSANOPTERA	
Thripidae	
<i>Aptinotrips rufus</i> (Gmelin); det. K. O'Neill ^a	
<i>Frankliniella tritici</i> (Fitch); det. K. O'Neill	
HOMOPTERA	
Aphididae	
Probably <i>Aphis</i> sp.; det. L. Russell ^a	
Probably <i>Callipterinae</i> sp.; det. L. Russell	
Probably <i>Pemphigini</i> sp.; det. L. Russell	
<i>Rhopalosiphum</i> sp.; det. L. Russell	
COLEOPTERA	
Dermestidae	
<i>Trogoderma</i> sp., probably <i>inclusum</i> (LeConte); det. J. M. Kingsolver ^a	
DIPTERA	
Cecidomyiidae	
Undet. sp.; R. G. Gagne ^a	
Chironomidae	
<i>Orthocladinae</i> sp.; det. W. W. Wirth ^a	
Sphaeroceridae	
Undet. sp.; det. G. Steyskal ^a	
ACARINA	
ACARIDIAE	
Acaridae	
<i>Trypophagus putrescentiae</i> (Schrank); det. E. W. Baker ^a	
Analgesidae	
* <i>Analges</i> sp.; det. W. T. Atyeo ^b	
Epidermoptidae	
* <i>Dermatophagoides</i> (<i>Sturnophagoides</i>) <i>bakeri</i> Fain, 1967; det. A. Fain ^c	
* <i>Passeroptas dermation</i> Trouessart & Neumann, 1887; det. W. T. Atyeo	
* <i>Proctophyllodes</i> sp., probably <i>egglestoni</i> Spory, 1965; det. W. T. Atyeo	
* <i>Trouessartia rosteri</i> (Berlese); det. W. T. Atyeo	
MESOSTIGMATA	
Dermanyssidae	
* <i>Dermanyssus gallinae</i> (De Geer); det. E. W. Baker	
* <i>Ornithonyssus sylviae</i> (Canestrini & Fanzago); det. E. W. Baker	
* <i>Pellonyssus passerii</i> (Clarke & Yunker); det. E. W. Baker	
Digamasellidae	
<i>Asca</i> sp.; det. E. W. Baker	
Laelaptidae	
* <i>Hypoaspis</i> sp.; det. E. W. Baker	
Phytoseiidae	
<i>Amblyseius</i> sp.	
Rhinonyssidae	
<i>Cas elbeli</i> Strandtmann; det. R. W. Strandtmann ^d	
ORIBATEI	
Eremaeidae	
Undet. sp.; det. E. W. Baker	

² J. D. Boykin. 1954. A quantitative survey of certain ectoparasites of the European starling, *Sturnus vulgaris* L. Unpublished M.S. thesis at Clemson University, Clemson, S. C. 41 p.

Table 1.—(Continued)

IXODIDES	
Amblyomminidae	
* <i>Haemaphysalis leporispalustris</i> (Packard); det. C. M. Clifford ^a	
PROSTIGMATA	
Cheyletidae	
* <i>Ornithocheyletia dubinini</i> (Volgin); det. E. W. Baker	
Ereynetidae	
* <i>Speleognathus sturni</i> Boyd; det. R. W. Strandtmann	
Penthaletidae	
<i>Penthaletus</i> sp., possibly <i>major</i> (Dugès); det. E. W. Baker	
Speleognathidae	
* <i>Boydia sturni</i> (Boyd); det. E. W. Baker	
Tetranychidae	
<i>Bryobia praetiosa</i> Koch; det. E. W. Baker	
<i>Petrobia latens</i> (Müller); det. E. W. Baker	
Tydeidae	
<i>Tydeus</i> sp.; det. E. W. Baker	

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^d Texas Technological College, Lubbock.

specimens were mounted on standard glass slides using Hoyer's solution. Samples that could not be identified were sent to Dr. William Anderson, Chief, Insect Identification and Parasite Introduction Research Branch, Agr. Res. Serv., USDA, Beltsville, Md., for determination. The identified material was returned and used as a reference for determining additional samples.

Large numbers of parasites were found on many birds. To facilitate counting, a counting chamber as described by Boykin² (1954) was used. Graph paper was glued to the underside of a 10-cm petri dish. The

graph paper, marked off in square inches, was further subdivided into quarters; each quarter was numbered consecutively.

RESULTS.—Table 1 lists the arthropods found on the starlings. Many species were not parasitic on starlings and no doubt occurred accidentally or incidentally on these birds. A total of 16 species, 2 species of Mallophaga and 14 species of Acarina, were thought to be parasitic on starlings. A new species *Dermatophagoides* (*Sturnophagoides*) *bakeri* Fain was discovered through this investigation. It was described by Fain (1967).

The 3 most frequently found species of parasites and the average number of each per bird (Fig. 2) were: *T. rosteri*, 46.1 with a peak population in the fall; *M. mutabilis*, 4.7 with a peak population during the winter; and *B. nebulosa*, 17.3 with a population peak during the spring.

DISCUSSION AND CONCLUSIONS.—Techniques used in removing parasites are probably the most important variables in work of this nature. It appears that the technique used in this work was more efficient in removing parasites such as mites than techniques used in previous works. Boyd (1951) reported a total of 9 Acarina recovered by direct examination of fresh birds. In the present work, 22 species of mites, including several species of nasal mites, were recovered. Fourteen of these were reported in the literature as being parasitic in nature. However, it is possible that Boyd recovered additional species of mites that were not reported because in her opinion they were not parasitic.

The variety of species and the number of specimens found on the starling indicate that there is a great possibility for the dissemination of diseases by insect vectors carried on it. A study of other species of birds would no doubt reveal a similar situation. As transmission studies pinpoint the relationship between disease vectors and host birds, interest may be stimulated for greater research of this nature.

In addition to the medical and veterinary importance of arthropods carried on starlings, mention should be made of the plant pests also carried in this manner. Arthropods found in this work that are of interest to horticulturists and economic entomologists include Collembola, Psocoptera, Thysanoptera, Homoptera, and Coleoptera. Considering the medical, veterinary, and horticultural importance of insects carried on starlings, studies on effective control methods for starlings may prove to be of great benefit.

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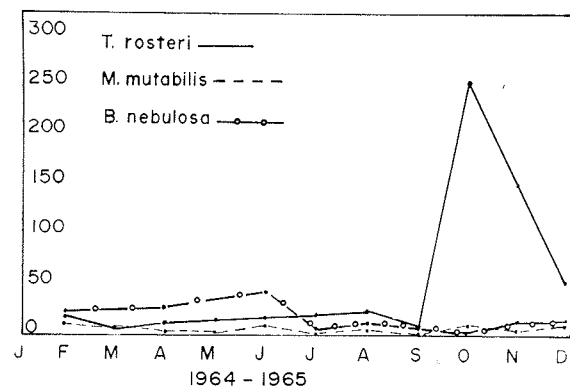


FIG. 2.—Average number of the 3 most frequently found species of ectoparasites on starlings.

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