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POPULATION FLUCTUATIONS OF THE MALLOPHAGAN
PARASITE *BRÜELIA VULGATA* (KELLOGG)
UPON THE SPARROW¹

WILLIAM J. WOODMAN AND ROBERT J. DICKE
University of Wisconsin

The purpose of this investigation was to determine if seasonal fluctuations of an ectoparasite occur in the relatively constant environment such as among the feathers of a bird host. Matthysse (1946) and Allen and Dicke (1952) reported that the chewing louse *Damalinia (Bovicola) bovis* (L) followed a seasonal cycle in which the maximum population occurred in the late winter, usually February or March. Although this fluctuation has been attributed to various physical and physiological causes by many investigators, none of the explanations have gained wide acceptance. cursory observations of the louse, *Damalinia lipeuroides* Megnin of the white tail deer, indicated that seasonal fluctuations may also occur upon this host.

Methods. For this investigation the body louse, *Brüelia vulgata* (Kellogg) of the house sparrow, *Passer domesticus* L. was chosen because of the abundance of the host. An attempt was made at the beginning of this investigation to collect ten birds per week for one year but this was not accomplished because of the reduced population of the sparrows during the summer months. Birds were collected by shooting with .22 cal. bird shot.

The ectoparasites were removed from the body of the host within two hours after the time of collection by placing the sparrows in a paper bag 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. The parasites, when anesthetised, released their grasp on the feathers and could then be easily collected from the paper.

Discussion and Results: A total of 391 house sparrows were collected. Of this number 174 were free of mallophagan parasites. No correlation was found between the ratio of infested and noninfested hosts throughout the year and it is assumed that the infestation of the individual bird host is due to chance. The percentage of infested sparrows was 55.5%. The total parasite pop-

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TABLE 1
MONTHLY SUMMARY OF BIRDS AND PARASITES, 1953

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	TOTAL
Number Infested Hosts.....	3	21	15	29	27	7	15	10	12	28	29	5	16	217
Number Parasites.....	5	105	64	268	108	150	87	19	21	111	215	24	113	1290
Number Parasites per infested bird.....	1.6	5.0	4.3	9.2	4.0	21.4	5.8	1.9	1.7	4.0	7.4	4.8	7.0	6.0
Total birds.....	10	43	39	44	41	8	32	27	21	54	41	8	23	391

ulation was lowest in the summer, intermediate in the fall and winter and highest in the spring. See table 1.

The results were analyzed using the standard analysis of variance F-test. Unequal samples were compensated by using the log number of parasites plus one for each of the individual hosts for the month. The number of parasites varies from one to sixty-eight per individual sparrow. Significant differences in the monthly louse population was found only between the months of May and June at the 0.05 probability level.

Because this increase in the total parasite population occurs at the time of maximum nesting activity of the house sparrow in this area, it may be caused by changes in the habits of the host during this period. This hypothesis of relationship of parasite incidence to breeding season might also be extended to other animals in the temperate areas in which the peak of the louse population occurs when the young and adults are closely associated and would thus insure the distribution of the parasites from the adults to the young.

Small numbers of the amblyceran species, *Menacanthus annulatus* (Piaget) were found upon ten sparrows during the months of October and November. Their absence throughout the remainder of the year is unexplained.

Summary: A total of 391 house sparrows were collected of which 217 were infested with a variable number of mallophagan parasites. The approximate average number of parasites per infested host for the year was six per sparrow.

Statistically significant differences in louse populations were indicated between the months of May and June. This increase may be correlated to the change in habits of the birds during the time of maximum nesting activity.

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