

Population composition of chicken body louse, *Eomenacanthus stramineus* (Insecta, Phthiraptera, Amblycera, Menoponidae s. l.)

SUNEEL KUMAR SINGH*, SURESH CHANDRA** and NISHA MAURYA**

With 1 Figure and 1 Table

Summary

The population composition of chicken body louse, *Eomenacanthus stramineus* (NITZSCH, 1818) on 34 individuals of *Gallus gallus* f. *domestica* from twelve different localities of Jaunpur (an Eastern part of India) in 2001 was determined. The intensity of infestation of this louse has been recorded as 149.4 per bird. The females outnumbered the males in natural population while adults dominated the nymphal population.

Zusammenfassung

Zur Populationsstruktur des Haushuhn-Federlings *Eomenacanthus stramineus* (Insecta, Phthiraptera, Amblycera, Menoponidae s. l.)

Von 50 im Jahre 2001 untersuchten Haushühnern *Gallus gallus* f. *domestica* aus verschiedenen Haltungen in Jaunpur (Indien) wurde auf 34 *Eomenacanthus stramineus* (NITZSCH, 1818) festgestellt. Auf etwa 56 % aller befallener Hühner konnten jeweils 11 bis 100 *stramineus*-Federlinge nachgewiesen werden. Auf einem Huhn fanden sich maximal 613 Individuen von *E. stramineus*. Die durchschnittliche Befallsintensität betrug 149,4 Federlinge pro Wirtsindividuum. Die Männchen von *E. stramineus* waren häufiger als die Weibchen, während die Adulti gegenüber den Larven dominierten.

Keywords: *Eomenacanthus stramineus*, intensity, structure of population, *Gallus gallus* f. *domestica*, India.

A. Introduction

Lice populations are highly variable ranging from absence to many hundreds, even thousands per host. Information regarding the population levels and composition of phthirapteran ectoparasitic insects affecting birds and mammals have, always attracted the parasitic entomologists. Only few workers have provided information on population composition of avian lice. Some workers have provided clues regarding the population level, when they were talking about the prevalence and intensity of different phthirapteran species, e.g. House Sparrow (HOYLE 1938, WOODMAN & DICKE 1954), Common Starling (BOYD 1951), Blackbird (BAUM 1968), poultry (HOHORST 1939, KALAMARZ 1963, ZŁOTORZYCKA *et al.* 1974, SAXENA *et al.* 1995), alcid (EVELEIGH & THRELFALL 1976), petrels (FOWLER *et al.* 1984), Reed Bunting (FOWLER & WILLIAMS 1985), Common Myna (CHANDRA *et al.* 1988, 1990), White-throated Dipper (MEY 1994)

and variety of birds belonging to different species (ASH 1960, KLOCKENHOFF *et al.* 1973, MEY 1982, 1995). Some idea about the natural population level has also been given in the papers relating to seasonal variations in population of selected avian Phthiraptera (FOSTER 1969, AGARWAL & SAXENA 1979, CHANDRA *et al.* 1988, 1990, SINGH *et al.* 2000 b, c). While recording the distribution of pigeon lice, NELSON & MURRAY (1971) and SINGH *et al.* (2000 a) have also indicated the population levels of four species. Likewise, CHANDRA *et al.* (2004) have noted the site preferences of *Eomenacanthus stramineus* of poultry. However, EVELEIGH & THRELFALL (1976), TRIVEDI & SAXENA (1991), SAXENA *et al.* (1997b) and SINGH *et al.* (1998) have made specific studies on population composition of avian Phthiraptera.

In the present paper, an attempt has been made to furnish information on population composition of chicken body louse, *Eomenacanthus stramineus*, from India.

*Dr. S. K. Singh (corresponding author), Department of Biotechnology, Modern Institute of Technology, Dhalwala, Rishikesh – 249 201, Uttaranchal, India, E-mail: sksinghcsir@rediffmail.com

**S. Chandra and N. Maurya, Ecology & Parasitology Laboratory, Department of Zoology, Kutir (P.G.) College, Chakke, Jaunpur (U.P.) 222 146, India.

B. Material and Method

Fifty poultry birds (purchased from twelve different areas of Jaunpur during January 2001 to December 2001) were taken to laboratory and sacrificed to study population composition of *Eomenacanthus stramineus* (NITZSCH, 1818). Other phthirapteran species (*Menopon gallinae*, *Lipeurus lawrensis tropicalis* and *Oulocrepis dissimilis*) has also been noted but not added in the present paper as has already been published else where. The fluffing technique of DUNN (1932) and HARSHBARGER & RAFFENSPERGER (1959) was found most suitable for such study. Chloroform has been used to narcotise the lice parasitizing host birds. Each bird, well secured to prevent the loss of lice by fluffing the wings was placed in plastic container with tight fitting lid along with a large wall of cotton wool soaked with chloroform. After 30 minutes, birds was removed from chamber and suspended by a wire to the feet (wings locked over back). A large polythene bag with a hole in bottom was pulled over the bird. The feathers were fluffed with hand and the polythene bag forced the lice to fall straight down on smooth white paper placed horizontally, about 3 inches below the head of bird. As much as 75 % population of louse was obtained within 5 minutes. After removing the lice by fluffing, each feather as well as skin was thoroughly searched for the presence of lice (with the help of magnifying torch). The lice so obtained were placed in 70 % alcohol. On a later date, the population was sorted out, separated stage-wise and sex-wise under stereozoom trinocular microscope.

C. Results

Out of 50 poultry birds examined, 34 carried *Eomenacanthus stramineus*. As many as 19 birds, could be placed in 11-100 lice category (mean 9.6 males [M], 13.3 females [F], 2.7 nymphs [N]); M

: F = 1: 1.4; adults [A] : nymphs [N] = 1: 0.1). Another 5 birds carried 101-200 lice (mean 51.2 M, 67 F, 34.2 N; M : F = 1:1.3; A : N = 1: 0.3) (Table 1, Fig. 1). Three birds were infested with 201-300 lice (94.3 M, 120.7 F, 84.3 N; M : F = 1 : 1.3; A : N = 1 : 0.4). Four birds had 301-400 lice (mean 95 M, 108.3 F, 138.5 N; M : F = 1: 1.1; A : N = 1 : 0.7). Two birds carried 401-500 lice (mean 124.5 M, 150.5 F, 204.5 N; M : F = 1 : 1.2; A : N = 1 : 0.7), while remaining one bird had over 501 lice (mean 171 M, 232 F, 205 N; M : F = 1 : 1.4; A : N = 1 : 0.5) (Table 1, Fig. 1).

Thus, a total of 5,080 lice (mean 149.4; 44.7 M, 56.4 F, 48.3 N: M : F = 1 : 1.3; A : N = 1 : 0.5) were recorded from 34 poultry birds. Maximum number of lice encountered on a single bird was 613 while minimum number remained 11. Adult exceeded the nymphs in all the levels of infestation while female outnumbered the male. The ratio between N I, N II and N III were recorded as 1 : 0.8 : 1.0) (Table 1, Fig. 1).

D. Discussion

Chicken body louse, *Eomenacanthus stramineus* is the most economically harmful phthirapteran species infesting poultry birds. It is also able to act as reservoir and transmitter of many poultry diseases like fowl cholera, typhoid and toxoplasmosis (SAXENA *et al.*, 1985). ASH (1960) noted 10,000 *Austromenopon* sp. on Mew Gull *Larus canus*. Likewise, PFADT (1971) has recorded 8,000 specimens of *Eomenacanthus stramineus* on a single poultry. The same stated ZŁOTORZYCKA *et al.* (1974). HOHORST (1939) registered exactly the mass infection of a chicken. He stated 2269 individual of *Eomenacanthus stramineus* besides 168 *Menopon gallinae* (L.), 45 *Goniocotes gallinae* (DE GEER), 14 *Lipeurus caponis* (L.) and 8 *Oulocrepis dissimilis* (DENNY). However,

Table 1. Showing population structure of *Eomenacanthus stramineus* upon 34 poultry birds of Jaunpur (India) in 2001.

No. of lice	Frequency			Mean Nymph	Adult	M : F	Ratio		Sex & Stage	Total no.	Mean
	Male	Female					A : N	I : II : III			
11-100	19	9.6	13.3	2.7	22.9	1 : 1.4	1 : 0.1	1 : 0.5 : 0.4	Male	1521	44.7
101-200	5	51.2	67	34.2	118.2	1 : 1.3	1 : 0.3	1 : 0.6 : 0.4	Female	1916	56.4
201-300	3	94.3	120.7	84.3	215	1 : 1.3	1 : 0.4	1 : 0.5 : 0.4	Nymph	1643	48.3
301-400	4	95	108.3	138.5	203.3	1 : 1.1	1 : 0.7	1 : 0.6 : 0.4	Total	5080	149.4
401-500	2	124.5	150.5	204.5	275	1 : 1.2	1 : 0.7	1 : 0.6 : 0.4	Range	11-613	
> 500	1	171	232	205	403	1 : 1.4	1 : 0.5	1 : 0.8 : 0.4			

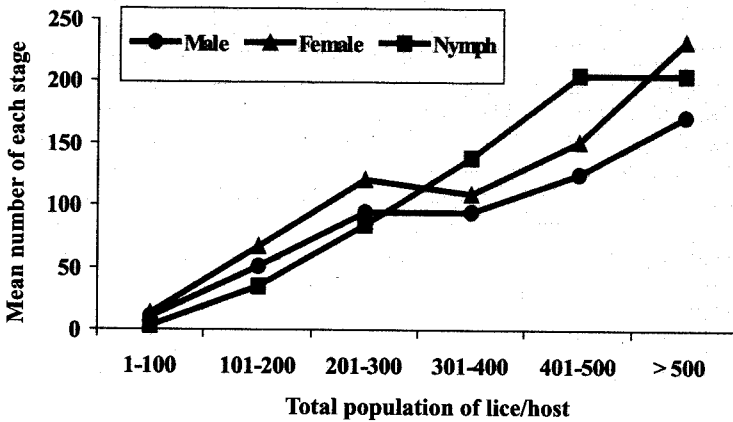


Fig. 2: Population composition of chicken body louse, *Eomenacanthus stramineus* in relation to total population on host body.

maximum number of *Eomenacanthus stramineus* recorded on 27 poultry birds in India was only 578 (TRIVEDI & SAXENA 1991). The intensity of infestation of this louse seems to be low on the poultry birds at Jaunpur, as the maximum number observed was 613 (mean 149.4 louse per bird). Present studies indicate that females outnumber the males in natural population. Furthermore, nymphal populations were always lower than the adults during the present study. The present report provides information regarding the population structure of this louse during different stages of infestation. Further work involving large number of birds and extensive surveys may yield more useful information.

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