**INTRODUCTION**

Poultry farming, especially chicken rearing, is a common agricultural practice in Nigeria, particularly in rural and peri-urban areas (Alabi & Aruna, 2006; Babatunde et al., 2012; Ewubare & Ozar, 2018; Ajala et al., 2021), providing essential sources of animal protein and farm manure (Gržinić et al., 2023). Chickens, for example, are primarily valued for their eggs and meat, which serve as significant sources of nutrition, while their waste is frequently used as organic fertilizer for soils (Kiba et al., 2020; Bhunia et al., 2021). Poultry farming is an economically viable venture in Nigeria, contributes substantially to household income, and helps in poverty alleviation by generating significant earnings for farmers (Alabi & Aruna, 2006; Babatunde et al., 2012). The poultry industry is an integral part of Nigeria’s agricultural sector, with poultry meat and egg production making a notable contribution to agricultural GDP (Babatunde et al., 2012; Ewubare & Ozar, 2018). For instance, a study by Alabi & Aruna (2006) revealed that small-scale poultry farming provides about 35% of women’s household income in the Niger Delta region of Southern Nigeria. Additionally, the industry has demonstrated significant growth; Liverpool-Tasie et al. (2016) reported a 600% increase in feed consumption over ten years, with domestic poultry production now fulfilling approximately 85% of the country's consumption needs. Despite this progress, poultry farmers encounter several obstacles, including financial loss due to difficulties in controlling diseases and pests.

Poor sanitation in indigenous poultry farming creates a favourable environment for ectoparasites, making infestations widespread. Poultry birds frequently harbour a diverse range of external parasites, including fleas (Siphonaptera), lice (Mallophaga), as well as ticks and mites (Acarina) (Oguntomole et al., 2018; Ahaotu et al., 2019; Refisa & Rebuma, 2024). Lice primarily consume dead skin cells and epithelial debris or sustain themselves by feeding on the blood of their hosts. These lice infestations can lead to anemia, weakness, and weight loss in poultry, significantly affecting their reproductive success and making younger birds particularly vulnerable (Jassim & Hadi, 2019; Refisa & Rebuma, 2024). Severe infestations result in high mortality rates, reduced yields, and chronic health issues among surviving birds, ultimately impacting farmers' productivity and profitability (Mishra et al., 2017; Refisa & Rebuma, 2024).

Poultry farming serves as a significant source of income in Edo State, Southern Nigeria. Chickens are commonly raised through backyard poultry farming, a practice predominantly carried out by women using extensive rearing methods (Emokaro & Eweka, 2015). However, parasitic infections are widespread among domestic birds in the region, as the common concerns and challenges associated with poultry farming are also present here. Research on lice infestations in domesticated and farmed birds within Edo State has been relatively limited. Among the few studies available, Love et al. (2018) reported the presence of *Menacanthus gallinae, Menopon stramineus*, *and Lipeurus caponis* in poultry birds, with *M. stramineus* showing a prevalence rate of 59.4%. Similarly, Isaac et al. (2019) recorded a 70.37% prevalence *of M. gallinae* in chickens and also identified *Chelopistes meleagridis, Goniocotes dissimilis, Lipeurus caponis*, and *Menacanthus stramineus*. Despite these findings, there remains a lack of up-to-date data on the distribution and prevalence of lice in Edo State. This gap in research underscores the need for updated studies to aid in the development of more effective pest-vector management strategies.

This study aims to investigate lice infestations in non-free-range poultry birds across multiple farms in Edo State, Nigeria. It seeks to determine the prevalence of parasitic invasion and assess the mean intensity of infestations, providing useful data for improved lice management and control measures.

**MATERIALS AND METHODS**

**Statistical analysis:**

Data was recorded in Excel sheets and statistically analyzed using the R software (Version 4.4.0). The number of lice (for each species found) across the four poultry farm locations was compared using a generalized linear model (GLM) with a quasi-Poisson distribution and a log link function. The quasi-Poisson GLM was chosen as the best-fitting model due to overdispersion, which was confirmed using the ‘check\_overdispersion()’ function from the "performance" package in R (Lüdecke et al., 2021). Multiple comparisons using Tukey’s post hoc test with the "emmeans" package (Lenth, 2024) were used for significant difference (α= 0.05) tests between poultry farms.

The percentage prevalence of lice among the poultry birds surveyed was determined using the formula:

Prevalence (%) = Number of infected host x 100

Number of examined hosts 1

**RESULTS**

In total, 604 lice were collected in this study, including two lice species: *M. stramineus* *and Me. gallinae.* The total count of *lice* across the four poultry farms is summarized in Table 1. Among the farms, SSQ recorded the highest total lice count (175), followed by Okhoro (152), Iguosa (142), and Eluseh (135). *M. stramineus* was found in all locations, with SSQ having the highest count (156) and Eluseh the lowest (120). In contrast, *Me. gallinae* was absent in Iguosa and had the highest count in SSQ (19).

Table 1: Lice collected from four Edo state, Nigeria poultry farms.

|  |  |  |  |
| --- | --- | --- | --- |
| Poultry farm location | *M. Straminus* | *Me. galinae* | Total |
| Eluseh | 120 | 15 | 135 |
| Iguosa | 142 | 0 | 142 |
| Okhoro | 145 | 7 | 152 |
| SSQ | 156 | 19 | 175 |

Prevalence of *M. straminus* was surprisingly high in all four poultry farms, ranging from 92% in Eluseh to 100% in SSQ (Figure 1). Comparatively, *Me. galinae* had lower prevalence in the birds examined, with Iguosa having none to SSQ having a prevalence of 30%.

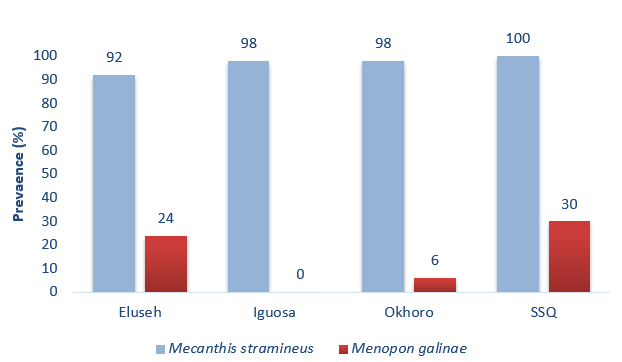


Figure 1: Prevalence (%) of lice infestation on sampled poultry birds from farms in Edo state, Nigeria.

The mean abundance of M. stramineus varied significantly across the four poultry farms, with the highest infestation at SSQ and the lowest at Eluseh (P < 0.05). In contrast, Me. gallinae had low infestation levels across all locations, with no significant differences (P > 0.05) (Table 2). These results indicate that M. stramineus is the dominant lice species in the studied poultry farms.

Table 2: Mean abundance of lice species in the four poultry farms in Edo state, Nigeria.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lice species | Location (Mean+ SE) | | | |
| Eluseh | Iguosa | Okhoro | SSQ |
| *M. stramineus* | 2.40+0.16a | 2.84+0.16ab | 2.90+0.18ab | 3.12+0.14b |
| *Me. galinae* | 0.30+0.09a | 0.00+0.00a | 0.14+0.09a | 0.38+0.09a |

\*The results are from the quasipoisson distribution and multiple comparisons by Tukey post hoc. Different letters indicate a significant difference (P<0.05) when compared within lice species.

**DISCUSSION**

The study of ectoparasites in southern Nigeria remains limited, yet understanding their prevalence and diversity is crucial for determining effective control measures. Regions like Edo State lack up-to-date data on lice infestations in poultry farms, despite poultry farming being a significant financial support for many families, particularly women. This study provides an updated assessment of lice infestations in Edo State. This study investigates four poultry farms in four locations (Eluseh, Igueosa, Okhoro, and SSQ) to assess the prevalence and diversity of lice. Only *M. stramineus* and *Me. gallinae* were identified, with the former exhibiting a remarkably high prevalence.

The high prevalence of *M. stramineus* across all the poultry farms surveyed is alarming. Previous studies in Edo State have reported lower infestation rates. For example, Edosomwan & Igetei (2018) found *M. gallinae* in 23% of chickens from Owan West, Owan East, and Akoko-Edo, while *M. stramineus* was observed at just 7.5%—significantly lower than the 92%–100% prevalence recorded in our study. Likewise, Love et al. (2018) reported an average prevalence of 56% for *M. stramineus* and 34% for *M. gallinae* in poultry farms located in Ekosodin, EDPA, and Adolor within the Benin metropolis, Edo State.

Although *M. stramineus* was generally more prevalent than *Me. gallinae* among the poultry birds in all four locations in this study, Isaac et al. (2019) reported a slightly different pattern in their study. Their findings indicated chickens had a higher prevalence of *Me. gallinae* than *M. stramineus* in poultry farms at multiple locations within Edo State, Nigeria. Specifically, in Igueben, *Me. gallinae* was recorded at 72% prevalence, while *M. stramineus* was found at 60%. Similarly, in Esan-West, *Me. gallinae* had a prevalence of 68%, whereas *M. stramineus* was considerably lower at 30%. A comparable trend was observed in Ovia North-East, where *Me. gallinae* was found at 75%, while *M. stramineus* had a prevalence of 35.5%.

*M. stramineus* and *Me. gallinae* are prevalent lice species affecting birds in Nigeria (Love et al., 2018; Luka et al., 2023; Midala et al., 2025; Opeyemi et al., 2021). Their infestations can severely impact chickens, leading to lower egg production, reduced body weight, smaller clutch sizes, and decreased feed intake (Murillo et al., 2024; Opeyemi et al., 2021). Infected birds may exhibit symptoms such as weight loss, rough and unkempt feathers, dandruff, and skin lesions (Shanta *et al.*, 2006). Additionally, the skin damage caused by these lice can heighten susceptibility to secondary infections (Opeyemi et al., 2021). To improve lice control strategies, future research should investigate poultry farm management practices and their influence on parasite prevalence and infestation severity. Such studies would provide critical insights for developing more effective measures to mitigate lice infestations and reduce the associated health and economic burdens on poultry farms.

**CONCLUSION**

This study highlights a concerningly high prevalence of *M. stramineus* and *M. gallinae* infestations in poultry farms across Edo State, Nigeria. Notably, *M. stramineus* was the dominant species, exhibiting a significantly higher prevalence than previously reported in the region. The widespread presence of these lice underscores an urgent need for effective control measures to mitigate their impact on poultry health and farm productivity. Given that lice infestations can severely reduce egg production, body weight, and overall flock performance, targeted management strategies—including improved biosecurity, regular monitoring, and strategic treatment interventions—are crucial for minimizing economic losses.

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