**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). It plays a crucial role in 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 to enhance soil fertility (Kiba et al., 2020; Bhunia et al., 2021). Poultry farming is also an economically viable venture in Nigeria, with research highlighting its profitability. It contributes substantially to household income and helps alleviate poverty 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 lice (Mallophaga), fleas (Siphonaptera), as well as ticks and mites (Acarina) (Oguntomole et al., 2018). Lice primarily consume dead skin cells and epithelial debris or sustain themselves by feeding on the blood of their hosts. These 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). Severe infestations result in high mortality rates, reduced poultry yields, and chronic health issues among surviving birds, ultimately impacting farmers' productivity and profitability (Mishra et al., 2017).

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 animals 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 and other ectoparasites 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:**

All statistical analysis was done using the R software (Version 4.4.0). We recorded the data in Excel sheets and analyzed the number of lice across the four poultry farm locations 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 we confirmed using the ‘check\_overdispersion()’ function from the "performance" package in R (Lüdecke et al., 2021). To compare lice counts between locations, we performed multiple comparisons using Tukey’s post hoc test with the "emmeans" package (Lenth, 2024).

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: *Menacanthus stramineus* *and Menopon 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). *Menacanthus stramineus* was found in all locations, with SSQ having the highest count (156) and Eluseh the lowest (120). In contrast, *Menopon gallinae* was absent in Iguosa and had the highest count in SSQ (19), followed by Eluseh (15) and Okhoro (7).

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

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

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

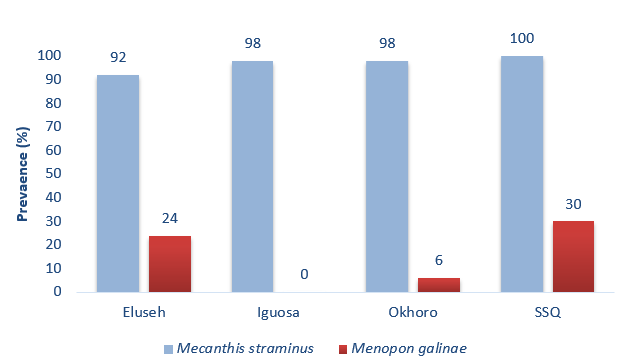


Figure 1: Prevalence (%) of lice infestation on sampled poultry birds from farms in Edo state, Nigeria.

The mean abundance of Menopon stramineus varied significantly across the four poultry farms, with the highest infestation at SSQ and the lowest at Eluseh (P < 0.05). In contrast, Menacanthus 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. Straminus* | 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.

**Recommendations**

Future research should explore poultry farm management practices to assess their relationship with parasite prevalence and infestation severity. Additionally, further lice surveys are needed to determine whether other lice species are present within these farms. Such studies would contribute to improved lice control strategies and help prevent the spread of diseases associated with these parasites.

**DISCUSSION**

The study of ectoparasites in southern Nigeria remains limited, yet understanding their prevalence and diversity is crucial for determining effective control measures. However, 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. We investigated four poultry farms across four locations (Eluseh, Igueosa, Okhoro, and SSQ) to assess the prevalence and diversity of lice. Notably, only Menopon stramineus and Menacanthus gallinae were identified, with the former exhibiting a remarkably high prevalence.

The widespread occurrence of M. stramineus across all study sites is concerning. Earlier research in Edo State reported lower infestation rates. For instance, Edosomwan & Igetei (2018) found M. gallinae at a prevalence of 23% in chickens from Owan West, Owan East, and Akoko-Edo, while M. stramineus was recorded at 7.5%, far lower than our findings (92%–100%). Similarly, Love et al. (2018) recorded M. stramineus at a mean prevalence of 56%, followed by M. gallinae (34%), in poultry farms located in Ekosodin, EDPA, and Adolor within Benin metropolis, Edo State.

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