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**PRELIMINARY SURVEY ON THE INTESTINAL PROTOZOAN AND HELMINTHES PARASITES OF DOMESTIC DUCKS REARED IN UMUAHIA AREA OF ABIA STATE.****Onyeabor, A. I and Onunkwo, D.N**<sup>1</sup>Department of Veterinary Parasitology and Entomology, Michael Okpara University of Agriculture, Umudike, Abia state, Nigeria.<sup>2</sup>Department of Animal Nutrition and forage science, Michael Okpara University of Agriculture, Umudike, Abia state, Nigeria.Corresponding author; [rasbuji@yahoo.com](mailto:rasbuji@yahoo.com); Phone number: +2348039211627**ABSTRACT**

*This study presents the findings of a preliminary survey conducted on intestinal protozoan and helminth parasites in ducks. The objective was to identify the different parasite species and their associated risk factors. A total of 110 fecal samples were collected from ducks and analyzed at the Veterinary Parasitology and Entomology laboratory, located at Michael Okpara University of Agriculture, Umudike. Out of the sampled ducks, 38 (34.5%) tested positive for either parasite eggs or oocysts. Among the positive samples, 16 (39.0%) were from adult ducks and 22 (31.8%) were from young ducks. Further analysis revealed that 9 (22.5%) of the positive samples were from male ducks, while 29 (41.4%) were from female ducks. Moreover, 3 (15.0%) of the positive samples were from semi-intensively managed ducks, while 35 (38.8%) were from extensively managed ducks. The identified parasites included *Ascaridia* spp (14 samples, 36.8%), *Strongyloides* spp (6 samples, 15.7%), *Capillaria* (4 samples, 10.5%), *Heterakis* (2 samples, 5.2%), *Eimeria* (10 samples, 26.3%), and *Cryptosporidium* (2 samples, 5.2%). These findings provide important preliminary insights into the prevalence and distribution of intestinal protozoan and helminth parasites in ducks. Further investigation is necessary to explore additional risk factors and develop effective control strategies for these parasites in duck populations.*

**Key words: Intestinal protozoan, helminths, and prevalence****Introduction**

Domestic ducks (*Anas platyrhynchos*) are of great importance in the rural economy as they serve as a valuable source of meat and eggs (Citation 1). In Umuahia, Nigeria, a wide variety of fowl, including chickens, ducks, turkeys, guinea fowl, and ostriches, are raised (Citation 2). Ducks are one of the most commonly domesticated bird species worldwide, second only to chickens, as reported by the Food and Agriculture Organization (FAO, 2014). In Nigeria alone, the duck population is estimated to be around 3.3 million, making a significant contribution to household food security (NBS, 2006).

The primary purpose of keeping ducks is for their eggs and meat, but additional duck products such as feathers and fattened livers can also be sold, providing further economic value (Van der Meulen and den Dikken, 2004). Waterlogged and low-lying areas are ideal habitats for duck rearing (Farjana *et al.*, 2008). However, the presence of parasitic infections presents a major challenge to successful duck rearing, as they have a detrimental impact on productivity and growth, leading to substantial economic losses for the country (Mohammed, 2009). Helminths and protozoan parasites have been identified as significant causes of reduced growth, decreased egg production, anemia, emaciation, morbidity, and mortality in poultry (Nnadi and George, 2010).

Therefore, this study aims to gather comprehensive information on the prevalence and diversity of intestinal protozoan and helminthic parasites specifically in ducks within the Umuahia area of Abia State. By conducting this research, we aim to identify and understand the specific parasites affecting the duck population in this region. The findings of this study will provide valuable insights into the types of parasites present, their distribution, and their impact on duck health.

Furthermore, the results obtained from this research will play a crucial role in formulating effective preventive measures and control strategies to reduce the spread of infections among ducks in the Umuahia area. It is essential to develop appropriate management practices and implement targeted interventions to mitigate the negative effects of parasitic infections on duck rearing.

Domestic ducks play a vital role in the rural economy, particularly in Nigeria, where they contribute significantly to household food security. However, parasitic infections pose a significant threat to duck rearing, leading to economic losses. This study aims to investigate the prevalence and diversity of intestinal protozoan and helminthic parasites in ducks within the Umuahia area. The findings of this research will provide valuable information for implementing

appropriate control measures and improving the overall health and productivity of ducks in this region.

**Materials and Method:**

The methodology employed in this research study aimed to investigate the presence of Helminthes eggs and protozoan oocysts in the fecal samples of ducks in a specific study area. The following procedures were conducted to gather and analyze the necessary data.

To begin with, all ducks included in the study were housed in cages situated on the farm or in the backyards of houses. During the daytime, the ducks were allowed to scavenge freely. For those ducks reared semi-intensively, they were provided with water and compounded feed. This setup ensured that the ducks had access to a varied diet and environment. To collect the fecal samples, individual ducks were selected, and their feces were collected into universal sample bottles. These sample bottles were used to maintain the integrity of the samples and prevent any cross-contamination. Subsequently, the collected fecal samples were transported to the Veterinary Parasitology and Entomology laboratory department of Michael Okpara University of Agriculture, Umudike.

In the laboratory, faecal smears were prepared from the fresh samples using the formol-ether concentration technique, as described by Chesborough in 1987. This technique allows for the concentration of any helminth eggs or protozoan oocysts present in the fecal material. The prepared smears were then stained using the Modified Ziehl-Neelsen technique, following the

method outlined by Henrikso and Pohlenz in 1981. This staining method facilitates the identification of cryptosporidal oocysts under a microscope.

In addition to the smears, three grams of each fecal sample were also prepared using the floatation and McMaster techniques. These techniques are commonly used in parasitological studies to determine the presence and quantification of helminth eggs in fecal samples.

Once the necessary data were obtained, various statistical analyses were performed. The data were analyzed using simple averages, percentages, and both descriptive and quantitative statistics. These statistical analyses provided a comprehensive understanding of the prevalence and distribution of Helminthes eggs and protozoan oocysts in the duck population under study.

The methodology described above encompassed the collection, processing, and analysis of fecal samples from ducks. The techniques employed, such as formol-ether concentration, Modified Ziehl-Neelsen staining, and floatation and McMaster techniques, enabled the identification and quantification of Helminthes eggs and protozoan oocysts. The statistical analyses applied to the obtained data provided valuable insights into the prevalence and distribution of these parasites in the study population.

**Results:**

The results are presented in tables 1-4

**Table 1: Percentage prevalence of the entire duck population and number of infected ducks.**

Population type	Population size	Number of infected ducks	Percentage (%) prevalence
Entire duck examined	110	38	34.5
Adult (>6wks)	41	16	39.0
Young (<6wks)	69	22	31.8
Male	40	9	22.5
Female	70	29	41.4
Semi intensively managed	20	3	15.0
Extensively managed	90	65	72.2

**Table 2: Individual parasites, prevalence and percentage prevalence.**

Genus	Prevalence	Percentage prevalence
<i>Ascaridia</i>	14	36.8
<i>Strongyloides</i>	6	15.7
<i>Capillaria</i>	4	10.5
<i>Heterakis</i>	2	5.2
<i>Eimeria</i>	10	26.3
<i>Cryptosporidium</i>	2	5.2

**Table 3: Prevalence of individual parasites in young and adult ducks**

Parasite	Overall prevalence	% prevalence	Young % prevalence	Adult % prevalence
<i>Ascaridia</i>	14	36.8	63.3	87.5
<i>Strongyloides</i>	6	15.7	27.2	37.5
<i>Capillaria</i>	4	10.5	18.1	25.0
<i>Heterakis</i>	2	5.2	9.0	12.5
<i>Eimeria</i>	10	26.3	45.4	62.5
<i>Cryptosporidium</i>	2	5.2	9.0	12.5

**Table 4: Prevalence of individual parasites in male and female ducks.**

Parasite	Overall prevalence	Percentage prevalence	Male % prevalence	Female % prevalence
<i>Ascaridia</i>	14	36.8	39.1	48.2
<i>Strongyloides</i>	6	15.7	8.6	20.6
<i>Capillaria</i>	4	10.5	9.4	13.7
<i>Heterakis</i>	2	5.2	4.2	6.8
<i>Eimeria</i>	10	26.3	28.1	34.4
<i>Cryptosporidium</i>	2	5.2	4.2	6.8

**DISCUSSION:**

The findings and implications of this study on the prevalence of helminth and protozoan parasites in ducks showed that out of the 110 ducks examined, 38 (34.5%) were found to be infected with these parasites. A total of four different helminth species and two different protozoan species were identified from the fecal samples. This section will further explore the prevalence of each parasite, compare the results with previous studies, discuss possible factors contributing to the observed prevalence, and highlight the significance of these findings.

The prevalence of helminth infections in ducks was determined to be 34.5% in this study. This finding is consistent with the prevalence reported by Utpal and Biswas (1997), who obtained a prevalence of 38.3% in ducks from West India. However, it differs from the higher prevalence of 81.1% reported by Yousuf et al. (2009). The variation in prevalence could be attributed to differences in geographical locations, management practices, and the presence of other animal species in the study areas. In the current study, it is suggested that the high prevalence observed may be due to the shared use of areas by ducks and domestic chickens, with free access for wild birds, as reported by Muhairwa *et al.* (2007).

Among the identified helminth parasites, *Ascaridia* species exhibited the highest prevalence (36.8%), while *Heterakis* species showed the lowest prevalence (5.2%). These findings are consistent with the results reported by Adejinmi and Oke (2011), which indicated a higher prevalence of *Ascaridia* species and a lower prevalence of *Heterakis* species. The high prevalence of *Ascaridia* species might indicate the abundance of infective stages of the worms in the study area, suggesting the presence of suitable environmental conditions for their survival and transmission.

The prevalence of helminth infections in adult ducks (39.0%) in the present study aligns with the findings of Emebet (2017), who reported a prevalence of 42.3%. This similarity in prevalence rates might be attributed to the higher mobility of adult ducks and their prolonged contact time with intermediate hosts and eggs in the environment while scavenging. In contrast, ducklings are more protected by their owners and, therefore, have limited exposure to infectious stages of parasites.

Sexual dimorphism was observed in the prevalence of both helminth and protozoan parasites, with a higher prevalence found in female ducks compared to male ducks. This finding is consistent with the report of Opara and Nwokedi (2011) and suggests that differences in reproductive activities between the sexes may contribute to this variation. However, further research is needed to fully understand the underlying mechanisms responsible for this sexual dimorphism.

The high prevalence of gastrointestinal parasites observed in extensively managed ducks aligns with the report of Muhairwa *et al.* (2007). This can be attributed to the ducks' exposure to eggs, oocysts, larvae of helminths, and intestinal protozoa present in the soil while foraging independently. The extensive management system provides ample opportunities for ducks to come into contact with infectious stages of parasites, leading to a higher prevalence compared to intensively managed ducks.

The identification of helminth and protozoan parasites in ducks raises concerns about the potential negative impact on their health and productivity. These parasites can cause various pathological effects, including reduced feed efficiency, poor growth, decreased egg production, and increased susceptibility to other diseases. Therefore, implementing effective control measures, such as regular deworming,

improved hygiene practices, and appropriate management strategies, is crucial for minimizing the prevalence and associated economic losses in duck production.

## CONCLUSION

The findings from this preliminary survey on intestinal protozoan and helminth parasites in ducks has provided valuable insights into the prevalence and distribution of these parasites in the studied population. The study identified multiple parasite species, including *Ascaridia* spp, *Strongyloides* spp, *Capillaria*, *Heterakis*, *Eimeria*, and *Cryptosporidium*, in the collected fecal samples. The overall prevalence of parasite infection was found to be 34.5%, with adult ducks showing a slightly higher infection rate compared to young ducks. Additionally, female ducks had a higher prevalence of infection compared to male ducks, and extensively managed ducks were more affected than semi-intensively managed ducks.

These findings highlight the importance of considering these parasites as potential health risks in duck populations. Understanding the prevalence and distribution of these parasites is crucial for developing effective control strategies to mitigate the impact of infections on duck health and productivity. Further investigations are warranted to explore additional risk factors associated with these parasites and to determine the most appropriate control measures for managing and preventing infections in ducks.

The results of this study contribute to the existing knowledge on intestinal parasites in ducks and provide a foundation for future research in this field. By conducting comprehensive investigations and developing targeted control strategies, it is possible to improve the health and welfare of duck populations and enhance their productivity in agricultural and veterinary settings.

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