


Ectoparasite Detection in Culling Layer Hen That Sold at Wonokromo Market Surabaya City

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Abstract

The purpose of the research were to identify the species, prevalence, and predilection of ectoparasite in Culling Layer Hen at Wonokromo Market, Surabaya City. The research was conducted from March to May 2021 with 100 sample of chickens were examined by the skin and feather body region. Identification of ectoparasite carried out at The Laboratory Parasitology, Faculty of Veterinary Medicine Universitas Airlangga using permanent *mounting* methods. The results showed, the species of ectoparasite that infest the culling layer hen were *Menopon gallinae* 21%, *Lipeurus caponis* 10%, *Ornythonissus bursa* 10%, and *Dubininia melopsitacci* 70%. Predilection of ectoparasite shows that *M. gallinae* found in the head-neck, back, wings, and legs region. *L. caponis* found in the head-neck, wings, and back region. *O. bursa* found in the legs and tail region, and *D. melopsitacci* found in the entire body of chicken, the head-neck, back, wings, abdomen, legs, and tail.

Keywords: Ectoparasite, Culling Layer Hen, Wonokromo Market

Introduction

Poultry is one of the livestock commodities that have an important role in supplying the highest animal protein in Indonesia. Sources of animal protein from poultry obtained from the chicken meat and eggs. Laying hens are one type of poultry that has the potential to be keep commercially because it produces eggs and produces meat after its production period ends which known as culling hens (Fenita et al., 2009). According to the Directorate General of Livestock and Animal Health of the Ministry of Agriculture (2020) the population of laying hens in East Java in the year 2020 compared to the population in the year 2019 has increased by 5.9%. The increase in the population of laying hens also followed by an increase in the number of culling layer hens that slaughtered. Old laying chicken ready to be culled that are not suitable for maintenance are usually sold for public consumption (Soeparno, 2005). Long maintenance age causes chickens to be more susceptible to ectoparasites because they have relatively many feathers (Setiawati, 2014).

Infestation of ectoparasites is a detrimental problem and can have a direct or an indirect impact. The direct impact is that these chickens experience anemia due to blood loss and may

even lead to sudden death, while the indirect impact can result in feather loss, alopecia, dermatosis and itching of the chicken skin (Yadav et al., 2017). Economic losses caused by ectoparasite infestations estimated to reach 620 million rupiah per year (Putranto et al., 2021). The market is one of the places to sell culled chickens as it is easily accessible by the public. The city of Surabaya has many traditional markets, one of which is the Wonokromo market (Supriyanto, 2019). The culled laying hens sold in the market is one indication that poultry production is an important sector of the livestock industry and plays an important role in the country's development through increasing income. However, the appearance of ectoparasites in laying hens severely limits the full realization of this goal (Ikpeze et al., 2008).

Seeing that the risk of ectoparasites that can infect culled laying hens is quite high and there is no further detailed information about the ectoparasite infestation in the culled laying hens sold at Wonokromo Market, Surabaya City, hence, it is necessary to conduct a research on culled laying hens sold at Wonokromo Market, Surabaya City.



Research Method

The sample used in this study was 100 culled layer hens purchased from five traders at Wonokromo Market, Surabaya.

Materials used KOH 10%, Alcohol in increasing percentage (30%, 50%, 70%, 95%, 96%), Xylol, Canada Balsam.

The tools used are specimen container, tweezers, petri dish, optilab, object glass, cover glass, microscope, label paper.

Method used is permanent mounting method without staining. The data obtained then presented descriptively in the form of pictures and tables.

Results and Discussion

The results of detection of ectoparasites that infested the culled layer hens at Wonokromo Market, Surabaya City were *M. gallinae* 21%, *L. caponis* 10%, *D. melopsittacci* 70%, and *O. bursa* 10%.

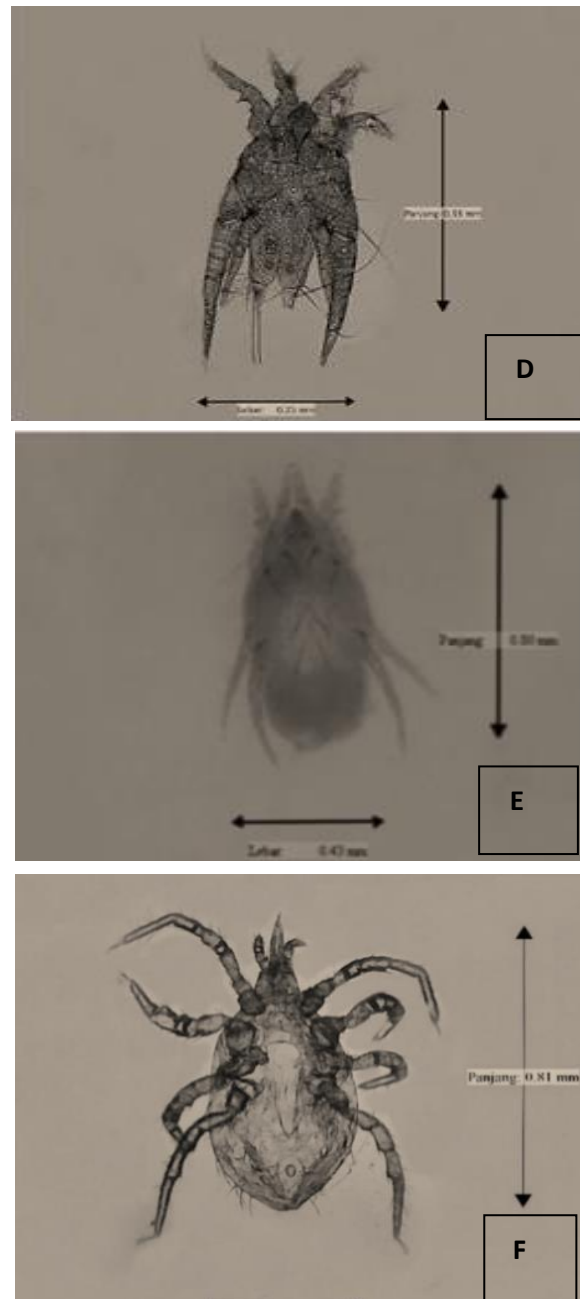
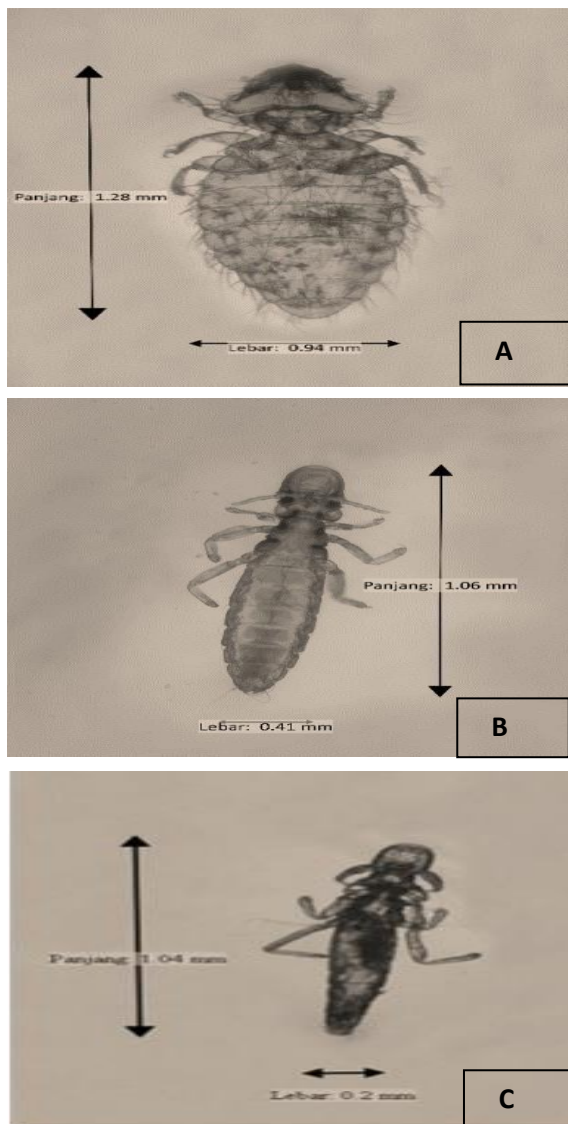


Figure 1. Ectoparasite Species, A. *M. gallinae*, B. *L. caponis* female, C. *L. caponis* male, D. *D. melopsittacci*, E. *D. melopsittacci* female, F. *O. bursa* female.

The results of this study is in accordance to Hasanah's (2017) research in Lampung which found ectoparasites in laying hens namely, *Menopon gallinae* 59.14%, *Lipeurus caponis* 20.14%, *Menacanthus stramineus* 8.75%, and *Dermanyssus gallinae* 11%.

The results of Setiawati's research (2014) at the Bogor Traditional Market found *Menopon gallinae* 77.14%, *Lipeurus caponis* 20.57%, and *Goniodes dissimilis* 2.92%. Species and prevalence differences can be caused by different environmental conditions, climate, humidity, temperature, and maintenance management.

Table 1. Ectoparasites predilection in body regions of culled laying hens at Wonokromo Market Surabaya.

Ectoparasite	Region	Total
<i>M. gallinae</i>	Head-neck	17%
	Back	13%
	Wings	5%
	Abdomen	-
	Legs	2%
	Tail	-
<i>L. Caponis</i>	Head-neck	6%
	Back	7%
	Wings	8%
	Abdomen	-
	Legs	-
	Tail	-
<i>O. bursa</i>	Head-neck	-
	Back	-
	Wings	-
	Abdomen	-
	Legs	9%
	Tail	4%
<i>D. melopsittacci</i>	Head-neck	70%
	Back	70%
	Wings	70%
	Abdomen	70%
	Legs	70%
	Tail	70%

The *M. gallinae* lice in this study had a predilection for the head-neck, back, wings, and legs regions. *M. gallinae* has a higher predilection for the head-neck region with a prevalence of 17% because the feather in this region is thicker and could be used to protect against external threats. The results in this study are different from those of Selfianisa et al., (2018) which showed that the back area was the largest area for the *M. gallinae* infestation pattern. These differences can occur because the culled laying hens sold at the Wonokromo market are experiencing feather loss. This lices also reported to act as a vector for transmitting psittacosis (parrot fever) in poultry because it carries the bacterium *Chlamydia psittaci* (Mirzaei et al., 2016).

The *L. caponis* lice in this study found on the wings, back and head-neck region. These lices most commonly found in the wing region with a prevalence of 8%, this is similar to the results of Lawal et al. (2016) which stated that *L. caponis* infestations mostly found in the feather structure of the shaft in the wing region. The structure of the feathers in the wing region has the formation of long, rough, and tight twigs. *L. caponis* has a round head, longer hind legs and filiform antennae. Antennae on male *L. caponis* appeared

to have scape extension, whereas scape extension did not occur in female. Large numbers of *L. caponis* infestations can cause restlessness and skin irritation in chickens (Ahaoutu et al., 2019).

D. melopsittacci mites found in all body regions of chickens with a prevalence of 70% (Table 1). This is similar to the research of Karma et al. (2015) found 252 *D. melopsittacci* with 100% prevalence in all body regions. This high infestation of mites is due to a decrease in chicken immunity due to stress, lack of nutrition, and a bad environment (Kocon and Chmura, 2017).

O. bursa mites found in the leg and tail regions (Table 1). In this study, *O. bursa* found in high numbers in the leg region with a prevalence of 9%. This mite can be a vector of Avian borreliosis which is transmitted vertically from female mites to juvenile mites (Murthy et al., 2015). *O. bursa* has potential to be zoonotic and can transmit to humans via biting, which later on causes itching and even dermatitis on the skin to take place (Mentz et al., 2015; Venu et al., 2020).

The culled layer hens sold at Wonokromo Market comes from several farms in East Java, namely Kediri, Blitar, Jombang, Batu, Mojokerto, and Pasuruan. The variety of physical conditions of livestock and climate shows a diverse picture of the prevalence of ectoparasites (Retnani et al., 2009).

The presence of ectoparasite infestations in laying hens at the Wonokromo market can be attributed to the production and supply areas of culled layer hens has a temperature and humidity of 19-32°C and 26-96%, which is in accordance with environmental factors that encourage the growth and development of ectoparasites in poultry (Putranto et al., 2021). Baktiar et al. (2014) stated that ectoparasites live well at temperatures of 18-38°C and humidity of 60-100%.

The distribution of ectoparasites in Wonokromo Market can also influenced by distribution factors and environmental conditions in the said market. The process of transportation using a box with chickens close together facilitate the cross contact between healthy chickens and chickens infested with ectoparasites. In addition, the location of culling layer hens is in a building that is not exposed to sunlight, high humidity, and muddy conditions around the coop because it is near the chicken slaughterhouse also plays an important role in supporting the spread of ectoparasite infestations in culled laying hens at Wonokromo Market. The results of the study showed that the level of ectoparasite infestation in culled layer hens sold at the Wonokromo Market, Surabaya City, was

included in the category of mild infestation. Rahayu (2010) states that the emergence of ectoparasites is the result of the interaction of three factors, namely livestock, disease agents, and the environment. A balanced interaction will produce healthy livestock and avoid disease outbreaks.

The condition of discarded laying hens in this study showed that the management of maintenance, prevention, and control of ectoparasites on farms supplying discarded laying hens in Wonokromo Market was good enough, but need more improvement to reduce the presence of ectoparasite infestations.

Conclusion

The prevalence of ectoparasite species that infest culled layer hens at Wonokromo Market Surabaya are *Menopon gallinae* 21%, *Lipeurus Caponis* 10%, *Ornithonyssus bursa* 10%, and *Dubininia melopsittacci* 70%.

The body regions where ectoparasites have a predilection for *M. gallinae* found in the head-neck, back, wings, and legs. *L. caponis* found in the head-neck, wings, and back regions, *O. bursa* found in the legs and tail regions, and *D. melopsittacci* found in the entire body of the chicken, namely the head-neck, back, wings, abdomen, legs, and tail.

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