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To cite this article: Nadia K. Thamer and Katherine B. Faraj 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **571** 012062

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## **A survey of Ectoparasites Infestation in Stray Dogs in Basrah Province / Iraq**

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**ABSTRACT** . One hundred samples of stray dogs with different ages and sex we examined to investigate the occurrence of ectoparasites ,from the period of October 2015 to May 2016. These samples were collected from different regions in Basrah province , the study showed the presence of three types of ectoparasites which are tick *Rhipicephallus sanguineus* (38.2% ) , lice species was *Heterodoxus longitrusus* (57.35%) and fleas was *Stenocephalides canis* (4.4 %).

The highest rate was record in Shatt Al-Arab region (100%) while the lowest infestation rate was (35%) in Al-Faw region . Ear and neck region of stray dogs body were infected by ectoparasites more than other region of the body ( 100 %) respectively total infestation rate was 68%. There were significant difference at ( $p \leq 0.01$ ) in the prevalence of all detected ectoparasites in relation to the sexes of dogs. Because of the stray dogs are reservoirs for zoonotic intestinal protozoa and helminthes parasites and ectoparasites should be considered important to public health , so may have an important role in transmission of some disease to human , so this study was designed to investigate ectoparasites in stray dogs in Basrah province .

**Keywords:** Stray dogs ,Ectoparasite, Ticks, Lice and Fleas.



## 1. Introduction

Ectoparasites are one of the major constraints to the health and performance of domestic animals worldwide. Ectoparasites are common on dogs, presenting an important cause of pruritic as well as nonpruritic skin disorders. They transmit a variety of diseases and cause hypersensitivity. Ticks, fleas and lice are the predominant ectoparasites encountered on domestic dogs in several countries around the world. Their feeding or movement patterns may have several direct and indirect effects on their host [1], [2].

Many of these ectoparasites (e.g. most lice) are host specific, while others (e.g. many ticks) parasitize a wider range of hosts. Several ectoparasites currently associated with domestic animals have been acquired by the introduction of either host or parasite into new regions, as animals have become domesticated throughout the world. Many ectoparasites are known to be vectors of pathogens, which the parasites typically transmitted hosts while feeding or (occasionally) defecating. However, ectoparasites - especially in large aggregations fasten with a glandular cement [3].

The eggs tend to be congregated in regions that the bird cannot preen, such as the head or the under wing coverts. Louse intensity can sometimes be estimated by counting eggs [4]. At times, however, large numbers of hatched eggs may be present - may also debilitate domestic animals in hives [5].

Ixodid ticks are important ectoparasites (external parasites) living by hemotophagy on blood of mammals, birds and sometimes reptiles and amphibians, they are vectors of a number of diseases that affect both humans, other animals and public health importance in many countries [6].

Lice are permanent parasites that glue their eggs to the hosts in the absence

of lice. Louse eggs have specific micro to epigraphy, making it possible to distinguish the eggs of different species of lice from a single host (one must first determine the specific association of egg type and hatched lice). It is relatively easy to distinguish hatched and unhatched eggs; the former are missing the distal tip and usually appear flattened. visual examination has been used by numerous workers to quantify adult and nymphal lice [7].

Fleas ( order Siphonaptera ) are small, wing-less , obligate , blood-feeding insects . Over 95% of flea species are ectoparasites of mammals, while the others are ectoparasites of birds . The order is relatively small with about 2500 described species, almost all of which are morphologically extremely similar and they have been involved in transmission pathogens such us haemoplasma and rickettsia [8] .

According to the latest statistics unofficially it is estimated that the number of stray dogs in Basrah is 250,000 one , these dogs can to ravage half of the population of the city in one afternoon or be economically source where it can be exported to countries that are dog meat a part of their diet, such as Thailand, Philippines and Vietnam this contribute to increase the national income of the country. The aim of this study was to isolated and identify the ectoparasites from stray dogs in Basrah province.

## **2. Materials and methods:-**

A total of 100 stray dogs ectoparasites were collected randomly within October 2015 to May 2016 from different regions of Basrah (Al-faw, Al-seeba, Shatt Al-Arab, Qarmat Ali and Abu Al-Khaseeb, each dog was examined systemically all the body areas, and record the information about sex ,age and color. For the collection Fleas and lice the scotch test was used , ticks were collected by hand,

the ectoparasites put in plastic containers with absorptive materials such as glycerin , methyl alcohol 70% until examined directly with anatomy microscope , and prepare slides , ectoparasite put in KOH 10% over high to remove tissue , then wash on distal water (10 min.) passing in a various concentration of alcohol (30% , 50%, 70% , 90%) for 5 min. in each concentration after that transfer sample to xylene 5 minutes then carrier with Canada balsam to be examined with compound microscope . The Identification of ticks was conducted on the description by [9] and the lice and fleas [10].

### 2.1. Data analysis

A chi-square test was used to determine any significant associations between rate of infestation and age and sex. Analyses were conducted using SPSS software version 16 (Chicago, IL, USA) with a probability (P) value of < 0.05 as a statically significant.

### 3. Result and Discussion

The result revealed that infection of 68 stray dogs from 100 stray dogs examined in different regions of Basrah province , a total of 109 ectoparasites in three species ( tick , lice, flea) were collected from stray dogs , *Rhipicephallus sanguineus* male and female, *Heterodoxus longitrasus* male and female and *Stenocephalides canis* female as show in table (1)

**Table (1)present study found three type of ectoparasites in stray dogs**

Number	Ectoparasite Species	Image No.
1	<i>Rhipicephallus sanguineus</i>	1 , 2 , 3 , 4
2	<i>Heterodoxus longitrasus</i>	5,6

	<i>Stenocephalides canis</i>	7,8
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Image 1 *Rhipicephallus sanguineus* female



Image 2 *Rhipicephallus sanguineus* male



Image 3 Mouth parts of *Rhipicephallus sanguineus*



Image 4 (A)Dorsal view (B) Ventral view of *Rhipicephallus sanguineus*



B

A

Image 5 (A) Male (B) Female of *Heterodoxus longitrassus*



Image 6 *Stenocephalides canis* female

Table 2 :- Number of infested dogs and the infestation percentage according to the region in Basrah province.

Region	Number of dog exam	Infected dog	Percentage of infestation
Al-faw	30	16	53.3%
Abu Al-Khaseeb	10	6	60%
Shatt Al-Arab	10	10	100%
Qarmat Ali	30	20	66.6%
Al-Seiba	20	16	80%
	100	68	68 %

Table (3):- percentage rate of infestation dogs with ectoparasites

Infestation dogs	Type of Ectoparasit	Number of infected dogs	Percentage rate of infestation
68	Ticks	26*	38.2%*
	Lice	39*	57.3%*
	Fleas	3*	4.4%*

\*  $p \leq 0.01$



Table (4):- The prevalence of ectoparasites according to male and female stray dogs.

Species of Ectoparasite	sex		Total	Site of infection
	Male	female		
<i>Rhipicephallus sanguineus</i>	34*	28*	62	Head , ear, abdomen , tail
<i>Heterodoxus longitrassus</i>	20*	15*	35	Neck ,head, abdomen
<i>Stenocephalides canis</i>	0	12*	12	Ear and neck
Total	34	55	109	

\* $p \leq 0.01$

The results showed in ( table 2 ) that Shatt Al-Arab recorded highest infestation 100% , while Al-faw recorded the lowest percentage 53% , that may depended on environmental conditions in this region as high temperature and high humidity, this is the first investigation of various ectoparasites that infest stray dogs in Basrah province . The result in table (2) showed the percentage of infestation rate was 68% of all ectoparasites this agreement with the result of [11] and far less than the percentage that recorded by [12]. This high frequency may be attributed to the presence of favorable climatic conditions important for survival, reproduction and development of various stages of ectoparasites of dogs. The species of *Rhipicephallus sanguineus* was the most common ectoparasites in this study 62 in 26 dogs this species has been reported in different parts of Iran [13] and [14] the result in table (3) showed the highest incidence of infestation was recorded in lice 57.35% and the lowest with fleas

(4.4%), while [15] showed that fleas are most abundant ectoparasites (73.07%) that may be back to the sudden jumping and rapid steering. In this study, there was a significant difference at ( $p \leq 0.01$ ) in the prevalence of all detected ectoparasites in relation to sex of dogs. This came in disagreement with previous reports [16]. Which have also reported a greater susceptibility of females for ectoparasites. Some behavioral factors specific to females the most important confining of females during reproductive period could favor re-infestations by fleas in the domestic areas would be responsible for this tendency.

## References

- [1] Alcaino, H. A.; Gorman, R. (2002). Flea species from dogs in three cities of Chile; *Veterinary parasitology* 105, 261-265.
- [2] Rinaldi, L.; Spera, G.; Musella, V.; Carbone, S.; Veneziano, V.; Iori, A. (2007). A survey of ears on dogs in southern Italy', *Veterinary Parasitology* 121, 69-70.
- [3] Lee, P.L. M. & Clayton, D. H. (1995). Population dynamics of Swift (*Apus apus*) Ectoparasites in relation to host fitness. *Ecological Entomology*, 20: 43-50.
- [4] Janovey, J. (1997). Protozoa, Helminthes and Arthropods of birds. Oxford university press, New York, USA. 303-337 Pp
- [5] Foster, M.S. (1996). The eggs of three species of Mallophaga and their significance in ecological studies, *J. of Parasitol.* 55(2): 453-456
- [6] Ayodhya S. (2014) Management of tick infestation in dogs. *J. Adv. Vet. Anim. Res.*, 1(3): 145-147.
- [7] Smart, J. A. (1943) *Hand Book of Identification of Insects of medical Important*. British museum (Nature History, London).
- [8] Dobler, G. & Pfeffer, M. (2011) Fleas as parasites of the family Canidea. *Parasites and vectors* 2011, 4:139.
- [9] Richard, W. & David S. (2000) *Veterinary Ectoparasite Biology, Pathology and control*. 260 Pp.

- [10] Portugaliza, H. P. & Bagot, M. B. (2015) : Different species of lice (Phthiraptera), fleas (Siphonaptera) and ticks (Ixodida) collected from livestock, poultry, reptile and companion animal in Leyte Island, Philippines. *Livestock Research for Rural Development* 27 (8) 2015
- [11] González, A.; Castro, D.C. ;González, S. (2004): Ectoparasite species from *Canis familiaris* (Linné) in Buenos Aires province, Argentina. *Vet. Parasitol.*, 120(1– 2): 123–129.
- [12] Kumsa, B., Mekonnen, S.( 2011). Ixodid ticks, fleas and lice infesting dogs and cats in Hawassa, southern Ethiopia. *Onderstepoort J. Vet. Res.* 78<https://doi.org/10.4102/ojvr.v78i1.326>. Art. #326, 4 pages.
- [13] Jafari S. S; Rowshan G. A.; Tamadon A.; Moghaddar, N.; Behzadi MA(2008). Seasonal frequency of ectoparasite infestation in dogs from Shiraz, southern Iran. *Turk J Vet Anim Sci*; 32(4): 309-313.
- [14] El-Gayar, A. K. (2005) The prevalence of some parasites of stray dogs in Ismailia City. *EVMSPJ.*,11(2):383–400
- [15] Bahrami A.M.; Doosti A.; Ahmady\_A. S.( 2012). Cat and dogs ectoparasite infestations in Iran and Iraq border line area. *World Applied Sciences Journal.* 18(7): 884-889.
- [16] Mosallanejad, B.; Alborzi, A.R. ; Katvandi, N. (2011): A Survey on Ectoparasite Infestations in Companion Dogs of Ahvaz District, South-west of Iran. *Arthropod-Borne Dis.*, 6 (1): 70–78.