

Ectoparasitic mites, ticks and lice of certain domestic birds at Gharbiya Governorate

A. M. Metwally¹, W. F. Ahmed² and N. S. Amer^{2,*}

¹ Department of Zoology and Nematology, Faculty of Agriculture, Al-Azhar University, Cairo, Egypt

² Department of Biological and Environmental Sciences, Faculty of Home Economics, Al-Azhar University, Tanta, Egypt

* Corresponding author E-mail: nahedsalahel-sayedamer@azhar.edu.eg (N. Amer).

ABSTRACT

Domestic birds are considered as one of the important sources of food for humans. The parasites generally caused the poor health and decrees in production of these birds, therefore this study was conducted to identify the ectoparasites that infect domestic birds at Gharbia Governorate. During the two successive years (2018 and 2019), several parasites of domestic bird species were collected by Tullgeren funnel. Five domestic bird species, (chickens, ducks, geese, pigeon and turkey hen) at four districts (Al Mahalla Al Kobra, Kutour, Samannoud and Tanta) at Gharbiya governorate were investigated. The collected parasites were forty-four mite species belonging to twenty-three families and two suborders, nine tick species belonged to two families and one species and one suborder. Eleven lice species belonged to four families and two suborders. In conclusion, 45 mite species, 9 ticks species and 5 lice species were collected from litter, chickens, ducks, Pekeeney ducks, quails, geese, pigeon in Gharbiya Governorate during successive two years. Ectoparasites are generally considered as the primary cause of many deleterious effects for many poultry species. Such effects including poor health, low growth, and decrease the productivity in Egyptian governorate.

Keywords: Ectoparasite; Chicken; Domestic birds.

INTRODUCTION

Poultry products are considered as one of the most important sources of food for humans, worldwide (Obiora, 1992). Poultry is the most kept livestock and almost every household in villages has about 5-20 indigenous chicken reared under free range management system (Ikpeze *et al.*, 2009). Ectoparasites are generally considered as the primary cause of poor health conditions, growth retardations and decrease in production in local chickens (Chege *et al.*, 2014).

The Poultry industry occupies an important position in the provision of animal protein (meat and egg) to man and generally plays a vital role in the national economy as a revenue provider. Poultry is one of the most intensively reared of the domestic species and one of the most developed and profitable animal production enterprises (Ebrahimi *et al.*, 2016). This study aims to identify the ectoparasites that infect domestic birds at Gharbia governorate

MATERIALS AND METHODS

Incidence of mites associated with domestic birds including feathers, skins, nasal cavity and feces. A general survey covered the most Gharbiya governorates collected from, Al Mahalla Al Kobra, Kutour, Samannoud and Tanta. A total of sample (400) of these locations.

These field trails started during the two years (2017 and 2018) at Gharbiya governorate.

Collecting sample

Domestic birds were collected from poultry markets, poultry farms and domestic yards.

Feces were collected from poultry farms and domestic yards.

Transferred samples to the laboratory

Birds were freshly transferred to the laboratory for parasites extraction. They must be examined immediately or after 30-60 minutes of hunting. Necessary information including; host, date and locality were recorded.

Feces of birds were placed in paper bags.

Extraction of the mites

Feathers were removed from the body of birds and feces were put in modified Tullgren funnels for 24 hours. Each funnel has 40 – watt electric lamp according to Krantz and Walter (2009). Adult mites and their stages were removed by a camel hair brush No. (00) or by dissecting needles. Mites were transferred to Petri-dishes (diameter, 9 cm, Hight; 1.5 cm) filled with water with airing of Vaseline to prevent escape of mites. Extracted contents of

the Petri-dishes were examined under the stereoscopic binocular.

Birds skins were carefully examined by stereomicroscope.

Skin mites were collected by specific needle.

Preparing mites

Collected mites were cleared in Nesbitt's solution. Extracted mites were mounted in Hoyer's medium on glass slides. After that these slides were heated over a hot plate at about 40°C to clear. This makes the legs and chelicerae completely stretched. Labels included (species host, date and locality of collection) were fixed to the slides.

RESULTS AND DISSECTION

Mites associated with domestic bird species

The collected mites belonging to both Superorder Astigmata and Gamasida:

Superorder Acaridida

This Superorder was represented by 19 families including Histostomatidae, Hemisarcoptidae, Euglycyphagidae, Aeroglyphidae, Sudasiidae, Glycyphagidae, Syringobiidae, Apioacaridae, Xolagidae, Dermoglyphidae, Pyroglyphidae, Psoroptodidae, Psoroptidae, Avenzoariidae, Analgidae, Proctophylloididae, Epidormoptidae, Laminosioptidae and Knemidocoptidae, these families have 34 species (Table1).

Family Histostomatidae

This family was represented by one species, *Fibulanoetus* sp isolated from feathers of pigeon collected from Tanta with moderate numbers.

Family Hemisarcoptidae

This family was represented by one species, *Hemisarcoptes* sp extracted from feathers of ducks and chicken collected from Mahalla Al Kobra and Kutour during summer season with moderate numbers.

Family Euglycyphagidae

This family was represented by one species, *Euglycyphagus intercalates* extracted from feathers of chicken collected from Samannoud during summer season with moderate numbers.

Family Aeroglyphidae

This family was included one species, *Aeroglyphus robustus* extracted from feathers of

chicken, ducks collected from Tanta with moderate numbers.

Family Sudasiidae

This family included one species, *Suidasia ponifica* extracted from chicken collected from Kutour with moderate numbers.

Family Glycyphagidae

This family was represented by one species, *Glycyphagus* sp extracted from tissues of chicken and ducks collected from Kutour and Tanta with moderate numbers.

Family Syringobiidae

This family was represented by two species, *Phyllochaeta* sp and *Syringophilus africanus* extracted from tissues of pigeon and geese collected from Kutour, Samannoud and Tanta with moderate numbers.

Family Apioacaridae

This family included one species, *Atelepoda* sp extracted from feathers of ducks and geese collected from Kutour and Tanta with moderate numbers.

Family Xolagidae

This family included one species, *Vingrassie* sp were extracted from feathers of ducks, chicken and turkey-hen collected from Kutour and Mahalla Al Kobra with moderate numbers.

Family Dermoglyphidae

This family was represented by five species, *Dermoglyphus columbae* and *D. micocera* extracted from skin of pigeon while *D. elongates*, *D. farina*, and *Dermoglyphus* sp were extracted from skin of ducks, geese and chicken collected from Kutour, Mahalla Al Kobra, Samannoud and Tanta with moderate numbers.

Family Pyroglyphidae

This family was represented by one species, *Pyroglyphus africanus* extracted from skin of chicken and pigeon collected from Kutour and, Mahalla Al Kobra with moderate numbers.

Family Psoroptodidae

This family was represented by one species, *Pandalura strigisoti* extracted from skin of chicken collected from Kutour and Mahalla Al Kobra with moderate numbers.

Family Psoroptidae

This family included one species, *Psoroptes cuniculi* extracted from skin of chicken

collected from Tanta, Kutour and Mahalla Al Kobra with moderate numbers.

Family Avenzoariidae

This family included two species, *Scutamegininia* sp and *Bdelordychus* sp extracted from feathers of ducks collected from Samannoud and Mahalla Al Kobra with moderate numbers. **Family Analgidae**

This family was represented by three species, *Analges spiniger* and *A. leiopus* extracted from feathers of chicken while, *Meginia columbae* extracted from feathers of pigeon and chicken collected from Samannoud and Mahalla Al Kobra with great numbers.

Family Proctophylloidae

This family was represented by two species, *Proctophylloderus orientalis* and *Pterophagus striculus* extracted from feathers of chicken collected from Samannoud, Kutour and Mahalla Al Kobra with moderate numbers with great numbers.

Family Epidormoptidae

This family was represented by four species, *Epidormoptes perdicola*, *Epidormoptes* sp, *M. anchor* and *Myialges* sp. were extracted from skin of pigeon while, the species *M. anchor* and *Myialges* sp extracted only from skin of ducks, chicken and turkey-hen collected from Tanta, Samannoud, Kutour and Mahalla Al Kobra with great numbers.

Family Laminosioptidae

This family included three species, *Laminosioptes cysticola*, *L. hymenopterus* and *Laminosioptes* sp extracted from skin of pigeon and turkey-hen collected from Tanta, Kutour and Mahalla Al Kobra with great numbers.

Family Knemidocoptidae

This family was represented by two species, *knemidocoptes* sp and *Neonemidocoptes gallina* extracted from skin of chicken collected from Tanta, Kutour and Mahalla Al Kobra with moderate numbers.

Superorder Gamasida

This Superorder was represented by four families; Dermanyssidae, Macronyssidae, Rhinonyssidae and Feryanidae these families have 10 species (Table1).

Family Dermanyssidae

This family was represented by one species, *Dermanyssus gallinae* isolated from blood

sucking mites of pigeon, ducks and chicken collected from Tanta by a few numbers during the summer season (2017) only.

Family Macronyssidae

This family was included three species, *Ornithonyssus bursa*, *Ornithonyssus sylviarum* and *O. hoogstraali* extracted from skin as blood sucking mites of turkey-hen and pigeon collected from Mahalla Al Kobra and Kutour during summer season with moderate numbers.

Family Rhinonyssidae

This family was included five species, *Rhinonyssus colymbicola*, *Rhinonyssus caledonicus*, *Rhinonyssus bisetosus*, *Neoryssus columbea* and *Sternostoma framcheacolam* extracted from nasal cavity of pigeon, ducks and turkey-hen collected from Samannoud, Mahalla Al Kobra Kutour and Tanta during summer season with moderate numbers.

Family Feryanidae

This family was represented by one species, *Freyana largifolia* extracted from nasal cavity of ducks collected from Kutour and Tanta.

Incidence of ixodid ticks associated with some domestic bird species at Gharbiya governorate.

Family Ixodidae Canestrini

This family was represented by five species belonging to two genera as,

Genus Hayalomma

This genus was included three species as, *Hayalomma impltatum*, *H. marginatum* and *H. dromedari* isolated from skin of turkey-hen, pigeon and ducks collected from Kutour and Mahalla Al Kobra with few numbers (Table 2).

Genus Rhipicephalus

This genus was represented by two species; *Rhipicephalus turanicus* and *R. guihoni* isolated from skin of pigeon and ducks collected from Kutour and Mahalla Al Kobra with few numbers (Table 2).

Incidence of argasid tick associated with some domestic bird species at Gharbiya governorate.

Family Argasidae Canestrini

This family was represented by four species; *Argas persicus*, *A. hermanni*, *A. streptopelian* and

Ornithodorinae coniceps isolated from skin of turkey-hen, ducks, pigeon and chicken collected from Tanta, Kutour and Mahalla Al Kobra with few numbers (Table 3).

Ectoparasitic lice associated with Domestic bird species at Gharbiya governorate

Order Mallbophaga

This order was represented by two suborders. Amblycera: this superorder includes three families: Menoponidae, Ricinidae and Laemobothiridae. Ischcera: this superorder has one family included, Philopteridae (Table 4).

Family Menoponidae

This family included three species, *Colpcephalus helzeenthali*, *Menopos* sp and *Mumidicola* sp extracted during the year (2017 and 2018) from skin of ducks, and turkey-hen collected from Kutour and Mahalla Al Kobra with a high number.

Family Ricinidae

This family included one species, *Ricinus* sp isolated with few numbers from skin of chicken and pigeon from Tanta during the period of study.

Family Laemobothiridae

This family was included one species; *Laemobothrion* sp isolated with a high number from skin of chicken, pigeon and ducks from Kutour during the period of study.

Family Philopteridae

This family was represented by six species; *Philopterus residus*, *Columbicola bacillus*, *C. columbe* L, *C. baculoides*, *Gonoides* sp and *Heptapsogaster* sp isolated from skin and tissues of Pigeon, chicken, and ducks collected from Kutour, Samannoud and Mahalla Al Kobra with a high number.

Our study revealed that the presence of parasitic found on domestic birds. Number of mite species were recorded in Gharbiya governorate was 2 suborders, 23 families and 44 species. These mites were previously audited by many investigators, Fain and Philips (1977), Fain *et al.* (1977), Rakha (1980), El Kammah *et al.* (1982), Hoogstraal (1984), El Kammah *et al.* (1990), Abd-Allah (1993), Fain and drugmand (1993), Gaud (1996), Fan (2000), Fan and Zhang (2004), El Kammah (2007) and Abdel-Gawad (2008).

Also, the parasitic ticks were recorded on domestic birds were 1 family, 2 genera and 5

species. The obtained data agree with Hoogstraal (1956), Taylor *et al.* (1966), El Kammah *et al.* (1982), Hoogstraal (1984), El Kammah *et al.* (1990), El Kammah (2007) and Guglielmone *et al.* (2010).

On the other hand, lice were recorded as parasitic on domestic birds were 1 order, 2 suborders, 4 families and 11 species. Our data agree with Emerson (1972), Rekasi (1979), Honacki (1982), Lyal (1985) and Beaucournu (1986).

CONCLUSION

In conclusion, 45 mite species, 9 ticks species and 5 lice species were collected from litter, chickens, ducks, pekeeny ducks, quails, geese, pigeon in Gharbiya Governorate during successive two years. Ectoparasites are generally considered as the primary cause of many deleterious effects for many poultry species. Such effects including poor health, low growth, and decrease the productivity in Egyptian governorate.

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Table 1. Incidence of mites associated with some domestic bird species at Gharbiya governorate.

Sub Order	Mites		Domestic Birds			
	Family	Mite species	English Name	Examined material	Abundance	Locality
Acaridida	Histostomatidae	<i>Fibulanoetus</i> sp	Pigeon	Feathers	++	Tanta
	Hemisarcoptidae	<i>Hemisarcoptes</i> sp	ducks, chicken and pigeon	Feathers	++	Mahalla Al Kobra and Kutour
	Euglycyphagidae	<i>Euglycyphagus intercalates</i> (Fain and Philips)	chicken, ducks pigeon	Feathers	++	Samannoud
	Aeroglyphidae	<i>Aeroglyphus robustus</i> (Banks)	Chicke, ducks Pigeon	Feathers	++	Tanta
	Sudasiidae	<i>Suidasia ponifica</i> (Oudemans)	ducks, chicken and pigeon	Tissues	++	Kutour
	Glycyphagidae	<i>Glycyphagus</i> sp	chicken and ducks	Tissues	++	Kutour and Tanta.

Continue: Table 1

Sub Order	Mites		Domestic Birds			
	Family	Mite species	English Name	Examined material	Abundance	Locality
Acaridida	Syringobiidae	<i>Phyllochaeta</i> sp <i>Syringophilus africanus</i> (Hughes)	Pigeon and geese	Tissues	+++	Kutour, Samannoud and Tanta
	Aptioacaridae	<i>Atelepoda</i> sp	ducks, geese and pigeon	Feathers	++	Kutour and Tanta.
	Xolagidae	<i>Vingrassie</i> sp	ducks, chicken, turkey- hen and pigeon	Feathers	++	Kutour and Mahalla Al Kobra
Acaridida	Dermoglyphidae	<i>Dermoglyphus elongates</i> (Megnin)	ducks, geese, chicken and pigeon	Skin	+++	Kutour, Mahalla Al Kobra, Samannoud and Tanta
		<i>Dermoglyphus columbae</i> (Sugimotos)				
		<i>Dermoglyphus farinae</i> (Hushes and Seoidi)				
		<i>Dermoglyphus micocera</i> (Gaud)				
		<i>Dermoglyphus</i> sp				
	Pyroglyphidae	<i>Pyroglyphus arfricanus</i> (Hugos)	chicken and pigeon	Skin	++	Kutour and Mahalla Al Kobra
	Psoroptodidae	<i>Pandalura strigisoti</i> (Buchholz)	chicken and pigeon	Skin	++	Kutour and Mahalla Al Kobra

Continue: Table 1.

Sub order	Mites			Domestic Birds		
	Family	Mite species	English Name	Examined material	Abundance	Locality
Acaridida	Psoroptidae	<i>Psoroptes cuniculi</i> (Delatand)	chicken and ducks	Skin	++	Kutour and Mahalla Al Kobra
	Avenzoariidae	<i>Scutamegininia</i> sp <i>Bdelordychus</i> sp	chicken, ducks, geese and pigeon	Feathers	++	Samannoud and Mahalla Al Kobra.
	Analgidae (Trouessart)	<i>Analges spiniger</i> (Giebel) <i>Analges leiopus</i> (Gaad and Mouchet) <i>Meginia columbae</i> (Boscholz)	chicken, ducks and pigeon	Feathers	+++	Samannoud and Mahalla Al Kobra.
	Proctophylloidae (Mangim and Troussaet)	<i>Proctophylloderus orientalis</i> (Gaud) <i>Pterophagus striculus</i> (Megmin)	chicken, ducks and pigeon	Feathers	+++	Samannoud, Kutour and Mahalla Al Kobra.
	Epidormoptidae	<i>Epidermoptes perdicola</i> (Fain and Evans) <i>Epidermoptes</i> sp <i>Myialges anchora</i> (Trouessart) <i>Myialges</i> sp	chicken, turkey-hen, ducks and pigeon	Skin	+++	Tanta, Samannoud, Kutour and Mahalla Al Kobra.
	Laminosiptidae	<i>Laminosiptes hymenopterus</i> (Jones and Goud) <i>Laminosiptes crysticola</i> (Vizioli) <i>Laminosiptes</i> sp	chicken, turkey-hen, ducks, geese and pigeon	Skin	+++	Tanta, Kutour

Continue: Table 1.

		Mites	Domestic Birds			
Sub Order	Family	Mite species	English Name	Examined material	Abundance	Locality
Acaridida	Knemidocoptidae	<i>Kenonemidocoptes</i> sp	chicken,	Skin	+++	Tanta, Kutour and
		<i>Neonemidocoptes gallina</i> (Bailliet)	ducks and pigeon			
	Dermanyssidae	<i>Dermanyssus gallinae</i> (Degeer)	ppigeon	Blood	++	Tanta
	Macronyssidae	<i>Ornithonyssus bursa</i> (Berlese) <i>Ornithonyssus sylviarium</i> (Canestrini and Fanzago) <i>Ornithonyssus</i> sp	turkey- hen, ducks and pigeon	Blood	+++	Mahalla Al Kobra and Kutour
Gamasida	Rhinonyssidae	<i>Rhinonyssus colymbicola</i> (Fain and Bafrot)	turkey- hen, ducks,	nasal cavit and Tissue	+++	Samannoud , Mahalla Al Kobra Kutour and Tanta
		<i>Rhinonyssus caledonicus</i> (Hirst)	geese and pigeon			
		<i>Rhinonyssus bisetosus</i> (Stranitman)				
		<i>Neoryssus columbea</i> (Crosseley)				
		<i>Sternostoma framcheacolam</i>				
	Feryanidae (Dubinin)	<i>Freyana largifolia</i> (Megnin and trouessart)	ducks and pigeon	nasal cavity and Tissue	++	Kutour and Tanta

+ = Few number ++ = Moderate numbers +++ = Great numbers

Table 2. Incidence of Ixodid ticks associated with some domestic bird species at Gharbiya governorate.

Ixodid ticks			domestic birds			
Sub Order	Family	Species	English Name	Examined material	Abundance	Locality
Ixodida	Ixodidae canestrini	<i>Hayalomma impltatum</i> (Schizel and Schlottes)	turkey- hen, pigeon and ducks	Skin and blood	++	Kutour and Mahalla Al Kobra
		<i>Hayalomma marginatum</i>				
		<i>Hayalomma dromedari</i> (Toch)				
	Ixodidae turanicus	<i>Rhipicephalus turanicus</i> (Pomerantzov)	pigeon and ducks	Feathers	++	Kutour and Mahalla Al Kobra
		<i>Rhipicephalus guihoni</i> (Morel and Vassiliades)				

+ = Few number ++ = Moderate numbers +++ = Great numbers

Table 3. Incidence of Argasid tick associated with some domestic bird species at Gharbiya governorate:

Ixodid ticks			domestic birds			
Sub Order	Family	Species	English Name	Examined material	Abundance	Locality
Ixodida	Argasidae canestrini	<i>Argas persicus</i> (Oken)	turkey- hen, ducks, pigeon and chicken	skin	++	Tanta, Kutour and Mahalla Al Kobra
		<i>Argas hermanni</i> (Audokin)				
		<i>Argas streptopelian</i> (Hoogestrol and Hornes)				
		<i>Ornithodoros coniceps</i> (Canestrini)				

+ = Few number ++ = Moderate numbers +++ = Great numbers

Table 4. Incidence of lice associated with some domestic bird species at Gharbiya governorate: -

Order	Sub Order	Ixodid ticks		domestic birds				
		Family	Lice species	English Name	Examined material	Abundance	Locality	
Mallbophaga	Menoponidae		<i>Colpcephalus helzeenthali</i>	ducks, and turkey-hen	Skin	+++	Kutour and Mahalla Al Kobra	
			<i>Menopos</i> sp					
			<i>Mumidicola</i> sp					
	Amblycera	Ricinidae		<i>Ricinus</i> sp	chicken and Pigeon	Skin	+	Tanta
Mallbophaga	Laemobothridae		<i>Laemobothrion</i> sp	chicken, pigeon and ducks	Feathers	++	Kutour	
Ischcera	Philopteridae		<i>Philopterus residus</i> (Ziatorzycka)	Pigeon, chicken, and ducks	Feathers	+++	Kutour, Samannoud and Mahalla Al Kobra	
			<i>Columbicola bacillus</i> (Giebl)					
			<i>Columbicola columbe</i> L.					
			<i>Columbicola baculoides</i> (Paine)					
			<i>Gonoides oustralis</i>					
			<i>Heptapsogaster</i> sp					

+ = Few number ++ = Moderate numbers +++ = Great numbers

تواجد اللحم والقراد والقمل المتطفل خارجيا على بعض الطيور الداجنة بمحافظة الغربية

عبد الستار محمد متولي¹ وفاء فايز احمد² ناهد صلاح عامر^{2*}

¹ قسم الحيوان الزراعي والنباتودا، كلية الزراعة، جامعة الازهر، القاهرة، مصر

² قسم العلوم البيولوجية والبيئة، كلية الاقتصاد المنزلي، جامعة الازهر، طنطا، مصر

* البريد الإلكتروني للباحث الرئيسي: nahedsalahel-sayedamer@azhar.edu.eg

الملخص العربي

الطيور الداجنة تعتبر أحد أهم المصادر الغذائية للإنسان، سببت الطفيليات بشكل عام تدهور الصحة العامة ونقص في إنتاج هذه الطيور، لذلك أجريت هذه الدراسة للتعرف على الطفيليات الخارجية التي تصيب الطيور الداجنة بمحافظة الغربية. خلال العامين المتتاليين (2018 و2019) تم جمع العديد من طفيليات أنواع الطيور الداجنة باستخدام قمع تلجرن. تم التحقيق في خمسة أنواع من الطيور الداجنة (الدجاج والبط والإوز والحمام والرومي) في أربع مناطق (المحلة الكبرى، قطور، سمنود، طنطا) بمحافظة الغربية. وكانت الطفيليات التي تم جمعها 44 نوع من اللحم يتبع 23 فصيلة وعدد 2 تحت رتبة، 9 أنواع من القراد (5 قراد جامد – 4 قراد لين)، 11 نوع من القمل القارض يتبع 4 عائلات وعدد اثنين تحت رتبة. وفي الختام تم جمع 45 نوعاً من اللحم و9 أنواع من القراد و5 أنواع من القمل من القمامة والدجاج والبط البيكيني والسمان والإوز والحمام في محافظة الغربية خلال عامين متتاليين. تعتبر الطفيليات الخارجية عموماً السبب الرئيسي للعديد من الآثار الضارة للعديد من أنواع الدواجن. مثل هذه الآثار بما في ذلك سوء الصحة، وانخفاض النمو، وانخفاض الإنتاجية في المحافظة المصرية.

الكلمات المفتاحية: الطفيليات الخارجية، دجاج، الطيور الداجنة.