

POPULATION DENSITY OF PALM DOVE BIRD, *Streptopelia senegalensis egyptica* (L.) and IT ASSOCIATED ECTOPARASITES IN ASSIUT GOVERNORATE

Mahmoud, N.A.; Abdel -Maksoud, M. A. and Omar, M. M. A.
Agric. Zoology and Nematology Dept., Fac. of Agric.,
Al-Azhar Univ. Assiut branch.

Abstract:

A field experiment was carried out in order to study the population density of palm dove, *Streptopelia senegalensis egyptica* (L.) and its associated ectoparasites in the Experimental farm of the Faculty of Agriculture, Al - Azhar University, Assiut branch, during 2011. One hundred and Twenty-five palm dove nests and fifty adult stages were collected from the study area. The results revealed that, high percentages abundance of palm dove were recorded during April and July. The lowest ones were found during May and September. The associated ectoparasites were also studied. The results revealed the presence fifteen of mite species belonging to fourteen genera, eleven families and three orders. Seven families of mites belonging to the order Mesostigmata (Macronyssidae, Rhinonyssidae, Phytoseiidae, Ascidae, Digmasselidae, Otopheidomenidae and Laelapidae), three families belonging to order Prostigmata (Bdellidae, Cheyletidae and Caligonellidae) and a single family belonging to order Metastigmata (Ixodidae) were extracted from

bodies and nests of palm dove bird. On the other side, the results revealed the presence two of insect species are associated also with nests and adult of this bird.

The ectoparasites encountered in this study are considered to be of medical and veterinary importance, therefore attention should be repaired.

Key words: Population density, Traps, Survey, Mites, Ticks, Lice, Palm dove, Nests.

Introduction:

Birds dominated the air and managed to invade a lot of different environments, whether land or water due to their unique anatomical and morphological structure. These make the existence of factions in the movement of permanent and continuous environment, to others and from country to country. For example, house sparrow, *Passer domesticus niloticus* (L.) hooded crow, *Corvus corone cornix* (L.) and palm dove, *Streptopelia senegalensis egyptica* (L.) were the resident birds in Egypt during all seasons of the year (Omar, 2010).

Received on: 25/12/2012 **Accepted for publication on:** 9/1/2013
Referees: Prof. Khalifa.H.Abdel-Gwad Prof. Alsaïd.A.Alarqy

Agricultural ornithology aims at obtaining scientific information on birds in relation to agriculture and using this information for their management. Parasitic mites and insects can be caused of considerable decreasing in birds population Manifested by restlessness damage to the features decrease in productivity transmission of diseases and mortality (**Bruun and Baha el Din, 1996**).

The role of mites as vectors of diseases and producers of dermatitis in man and domestic animals should be taken into consideration mites a large assemblage of primarily terrestrial mites which with few exceptions are no predatory in habit. The birds may be incriminated in transmitting the causative agents of certain serious plant diseases, such as viruses, bacteria and fungi, in addition to other plant and bird species (i.e., insects and mites).

It has been reported that ectoparasites affect in the health and productivity of birds, leading them to spend long period of time preening rather than involved in other essential life activities (**Clayton et al., 1999**).

This study was designed in order to provide informations about the types and prevalence of population density of palm dove birds and their associated ectoparasites with their nests in the experimental farm of the

Faculty of Agriculture, AL – Azhar University, Assiut branch.

Materials and Methods:

Bird habitats:

The field experiment was carried out at the Experimental farm of the faculty of Agriculture, AL – Azhar University in Assiut governorate. In order to study the population densities of palm dove, *Streptopelia senegalensis egyptica* (L.) birds and their associated ectoparasites with their bodies and nests in Assiut during 2011 were encountered .

Trap design and data collection:

(Fig.1) show a PAROTRAP, which adapted from a modified Australian crow trap (MACT), described by **Royall (1969)** and **Bashir (1979)**. PAROTRAP is 1.8 m. length, 1.8 m. width and 1.8 m. height at the sides. Method of catching birds in simple principle : birds enter through small holes in the welded – wire center section of the truncated -V- shaped cage, and once inside they endeavor to escape by going to the outer elevated or peaked walls rather than through the entrance opening farther down.

Four traps were set up at the edge of ripening crops or at sites likely to produce a good catch. Sites were not randomly selected to ensure that at least some of the sites contained birds. . Each trap was provided with three to four decoy birds (both sexes), sorghum and maize seeds and water, which was replenished as

required to sustain decay and trapped birds. The traps were collected weakly starting from the breeding season of palm dove, *Streptopelia senegalensis egyptica* (L.).

One hundred and Twenty-five palm dove nests and fifty adults stages were collected from the farm. Adults of palm dove and nests were separately transferred into the laboratory.

Collection of ectoparasites associated with palm dove bodies and their nests:

Mites and insects were extracted using modified Brleese's funnels for 6:8 hours, receiving the extraction in aquatic medium. Mites were picked from the medium by a camel hair brush No. (0.0) used in biological experiments and transferred to sudden death solution containing ethanol 70% and acetic acid at 9:1 ratio, which quickly killed and stretched their bodies. Mites were picked from sudden death solution to clearing agent such as Nesbit solution or

lactic acid for a period depending on mite species and sclerosis degree.

Mite individuals were picked up from clearing solution and singly mounted in drop of Hoyer's medium and sample data was written on each side. Slide was put in 40 - 45° C oven for 24 hours, then gets out and tightly pointed on cover corner by nail paint and located in slide box horizontally, then kept at room temperature for one week.

Slide cover was completely tightened by glue after ward then subjected to identification. Labels containing all necessary information such as locality, color of the live individuals and date of calculation were stuck a side of the slide. Sudden death solution was used for clearing glass slides and covers directly before using then in mounting specimens to over come the effect of moisture resulting from weather factors and moisture absorption from them.

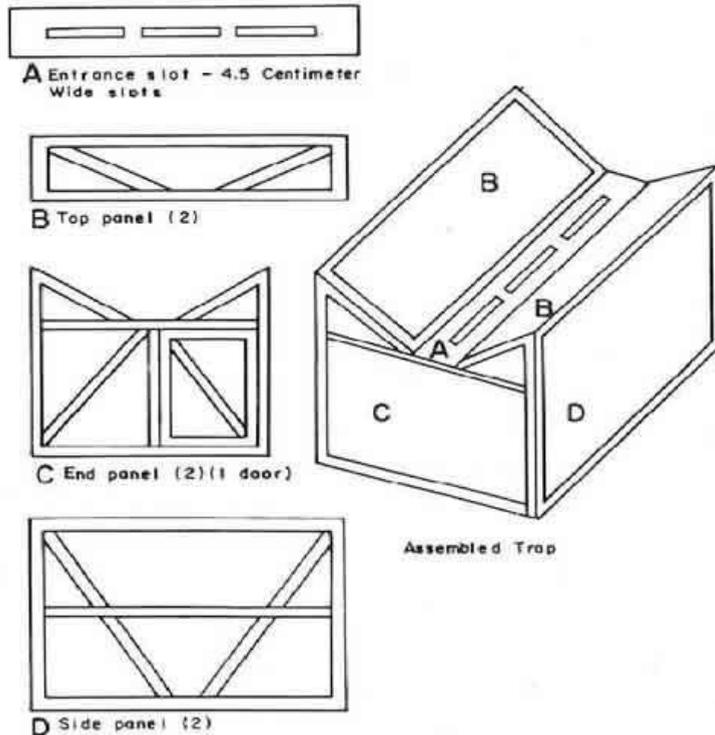


Fig. (1): Design of a new Parotrap adapted from M.A.C trap.

Results

Population abundance of palm dove birds:

Data presented in table (1) and fig. (2) Showed the percentages of the monthly abundance of palm dove individuals caught (male and female), numbers during the year of investigation (2011). The results revealed that, the population trend of the palm dove birds shows high percentages of abundance during April and July (17.69 & 21.54%) out of the overall year total caught. Followed by November, December, and August (9.99, 11.53 & 10.00 %), respectively. Low percentage of abundance

was recorded during May and September (3.08 & 3.85%), Followed by January, February, March, June and October (2.31, 2.31, 4.62, 6.16 & 6.92%), respectively out of the overall year total caught.

The same table revealed that both sexes exhibited approximately the same population trend through this year of investigation. The population densities of both adult males and females decreased during May and September. In which, the percentages of their monthly sums were accomplished to (0.77 & 2.31%) and (1.54 & 2.31%) out of the overall year total caught, for mal

and female individuals, respectively. During the next three months, October, November and December. The population trend increased gradually and reached to its relatively high levels of abundance (2.31 & 4.61%), (4.61 & 5.38 %) and (4.61 & 6.92) for male and female individuals during October, November and December, respectively. The highest individuals caught of both adult males and females (6.92 & 10.77%) and (7.69 & 13.85%), out of the overall year total caught were achieved

during April and July, respectively. Through the next two months March and June, little deficiency was recorded respecting the levels of population abundance. The recorded percentages of monthly sums were (1.54 & 3.08%) and (3.08 & 3.08%) for male and female individuals during the first and the second months. Then, the population abundance was hastily declined through January and February (0.77 & 1.54%) and (0.77 & 1.54%) for males and females out of the overall year total caught.

Table (1): Monthly percentage of palm dove caught from the farm during 2011.

Date	Male	Female	Total
January	0.77	1.54	2.31
February	0.77	1.54	2.31
March	1.54	3.08	4.62
April	6.92	10.77	17.69
May	0.77	2.31	3.08
June	3.08	3.08	6.16
July	7.69	13.85	21.54
August	3.85	6.15	10.00
September	1.54	2.31	3.85
October	2.31	4.61	6.92
November	4.61	5.38	9.99
December	4.61	6.92	11.53
Total	38.46	61.54	100

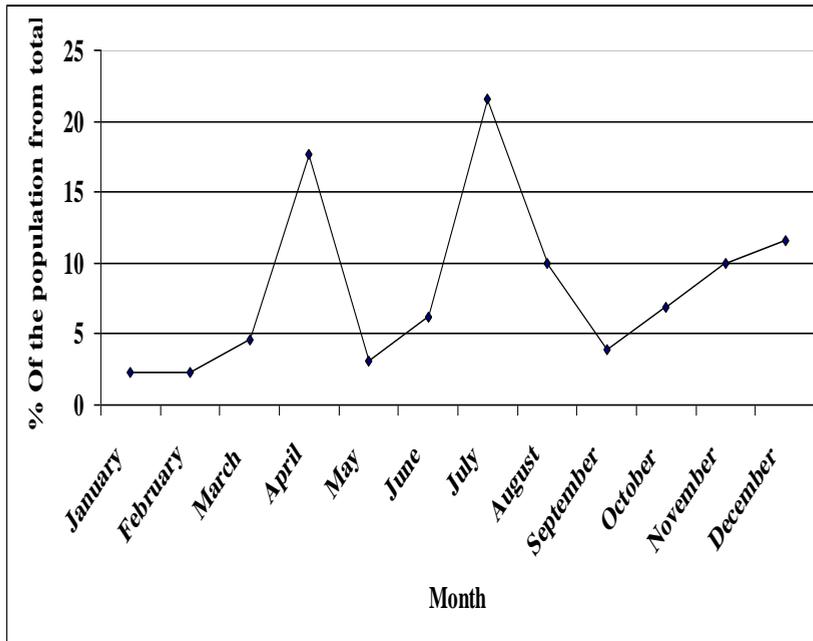


Fig. (2): Monthly percentage of palm dove caught from the farm during 2011.

Ectoparasites (Mites and Insects) associated with palm dove bodies and nests:

Data in Table (2) revealed the presence of certain ectoparasites collected from palm dove bodies and their nests in the farm of Faculty of Agriculture, AL – Azhar University, Assiut governorate. The collected parasites were found to be fifteen species of mites belonging to fourteen genera, eleven families and three orders.

Order Mesostigmata was represented by, eleven species. Four species of mites *Ornithonyssu bacoti*, *Ornithonyssus bursa*, *Ornithonyssus* sp and *Steatonyssus* sp pertaining to the family: Macronyssidae, two species (*Pellonyssus pasari* and *Liponyssus* sp.) belonging to the family: Rhinonyssidae and one

species of mite *Typhlodromus balanites*. *Proctolaelaps orientalis*, *Dendrolaeps* sp. was belonging to family Digmasellidae, *Otopheidomenis* sp. *Heamolaelaps* sp. Pertaining to the families: Phytoseiidae, Ascidae, Digmasellidae, Otopheidomenidae and Laelapidae, respectively.

Order Prostigmata was represented by three species of mites *Spinibdella bifurcate*, *Ker bakeri* Cheyletidae and *Molothrognathus plateltus* belonging to the families: Bdellidae, Cheyletidae and Caligonellidae, respectively.

Order Metastigmata was represented by single species of

tick, *Argas persicus* belonging to family Argasidae.

On the other side, data in the same table showed presence of the two insect species associated with Palm dove body and nest, Order: Phthiraptera was represented by two species of

lice, *Menopon gallinae* and *Columbicola columbae* of the families: Menoponidae and Philopteridae. The insect species were collected from bird bodies and nests in moderate numbers during the period of study.

Table (2) Ectoparasites (Mites and Insects) associated with palm dove bodies nests collecting during 2011.

Parasite	order	Family	Species
Mites	Mesostigmata	Phytoseiidae	<i>Typhlodromus balanites</i> El-Badry
		Ascidae	<i>Proctolaelaps orientalis</i> Nasr
		Digmasellidae	<i>Dendrolaelaps</i> sp.
		Otopheidomenidae	<i>Otopheidomenis</i> sp.
		Macronyssidae	<i>Ornythonyssus bacoti</i> (Tio and Emcka)
			<i>Steatonyssus</i> sp.
			<i>Ornithonyssus bursa</i> (Hwong)
			<i>Ornithonyssus</i> sp.
		Rhinonyssidae	<i>Pellonyssus pasari</i> (Clark and Yunker)
			<i>Liponyssus</i> sp.
	Laelapidae	<i>Heamolaelaps</i> sp.	
	Prostigmata	Bdellidae	<i>Spinibdella bifurcate</i>
		Cheyletidae	<i>Ker bakeri</i> Zahe and Soliman
Caligonellidae		<i>Molothrognathus platelttus</i> Soliman and Gomaa	
Metastigmata	Argasidae	<i>Argas persicus</i>	
Insects	Phthiraptera	Menoponidae	<i>Menopon gallinae</i>
		Philopteridae	<i>Columbicola columbae</i>

Discussion

The work herein has been carried out to study the ectoparasites infested of palm dove in order to provide baseline information on these subjects.

Low numbers of counted palm dove, *Streptopelia senegalensis* birds by using traps in different months of the year may be due mainly to the breeding season of birds or abundance of feeding in

winter and summer crops in fields. (Omar,2005). The ectoparasites encountered in this study are considered to be of medical and veterinary importance and, hence, attention sowed be required. The mite species, *Ornythonyssus bacoti* was attracted the bodies of rodent species in the Farm Animal Production, Faculty of Agriculture, Assiut University. (Desoky, 2011). While tick species, *Argas persicus* and the lice, *Columbicola columbae* were associated with cattle egret, *Ardeola ibis ibis* (L.) and their nests at El-Menoufia governorate. (El – Danasoury, 2002). The results revealed also that there is no difference ectoparasite numbers at the bodies of palm dove males or females in agreement of the observations obtained by Adang *et al.*, (2008), who reported that insignificant differences between male and female pigeons in overall ectoparasites infestation. Lucas *et al.*, (2008) found that, *Argas persicus*, *Menopon gallinae* and *Columbicola columbae* were associated with the Laughing dove, *Streptopelia senegalensis* (L.), in Zaria, Nigeria. The collected of ectoparasites during breeding season need strongly surveillance and control during the breeding season of palm dove. For any effective control programme, palm dove should be prevented from coming to the poultry houses, since special control program should be

recommended.

Acknowledgements

Authors indebted to **Prof. Dr. Abdel-Sattar M. Metwally**, Professor of Acrology at Agric. Zoology and Nematology Department, Faculty of Agriculture at Cairo, AL-Azher Univeresity, for identification of mite and insect species and moral assistance.

References

- Adang, K. L.; Oniye, S. J.; Ezealor, A.U.; Abdu, P. A. and Ajanusi, O. J. (2008)** Ectoparasites of domestic pigeons (*Columba livia domestica*Linnaeus) in Zaria, Nigeria. Research Journal of Parasitology, 3: 79-84.
- Bashir, E.A. (1979)** A new " PAROTRAP " adopted from the MAC trap for capturing live parakeets in the field, W.B. Jackson (ed.), proc 8th Bird Control Seminar, Bowling Green State University, Bowling Green, Ohio : 167-171.
- Bruun, B. and Baha el Din, S. (1996)** common birds of Egypt. The American University in Cairo press, 37.
- Clayton, D. H.; Lee, P. L. M.; Tompkins,D.M.and Brodie,E.D.(1999)** Reciprocal natural selection on host-parasite phenotypes. American Naturalist, 154: 261-270.
- Desoky, A. S. S. (2011)** Studies on certain ectoparasites associated with some farm animals and their control.

- Ph.D. Thesis, Fac. of Agric., Assiut Univ., Egypt.154.
- El – Danasoury, M.A.M. (2002)** Ecological and biological studies on some harmful birds for plants at Minoufia governorate. M. SC. Thesis, Fac. of Agric. Al-Azhar Univ, 125.
- Lucas, K. A.; Sonnie, J. O.; Augustine, U. E.; Paul, A. A.; Joseph, O. A. and Kennedy, P. Y. (2008)** Ectoparasites of the Laughing Dove *Streptopelia senegalensis* (Linnaeus, 1766) (Aves: Columbidae) in Zaria, Nigeria. *Lundiana*9 (1):67-71.
- Omar, M. M. A. (2005)** Ecological and biological studies on some wild birds M.Sc.Thesis Fac. Agric., Al – Azhar Univ, 73.
- Omar, M. M. A. (2010)** Studies on some wild birds in Assiut with special reference to harmful birds and its control. Ph.D. Thesis, Fac. of Agric., Al–Azhar Univ., Egypt, 127.
- Royall,W.C.J.(1969)** Trapping house sparrow to protect experimental grain crops. *U.S.D.I.Wild.Leaflet(484): 4.*

الكثافة العددية لطائر اليمام المصري والطفيليات الخارجية المرتبطة به في محافظة أسيوط

نشأت عبدالعزيز محمود ، محمد أبو الحمد عبدالمقصود ،

محمود مبارك عبدالعال عمر

قسم الحيوان الزراعي والنيماطودا - كلية الزراعة - جامعة الأزهر
فرع أسيوط

الملخص العربي

تعتبر الطيور البرية واحدة من أهم مجموعات الفقاريات التي تساعد أو تقوم بنقل العديد من مسببات الأمراض (فطرية - بكتيرية - فيروسية) لحيوانات المزرعة والطيور الداجنة والنبات ، لذا فقد أجريت هذه الدراسة بهدف إلقاء الضوء على الطفيليات الخارجية المرتبطة بطائر اليمام المصري وعشوشه، والذي يمكن أن ينقل لحيوانات المزرعة والطيور الداجنة أو الإنسان الكثير من هذه الطفيليات ، وذلك لأهميتها حيث تعتمد معظم المتطفلات في تغذيتها على الدم والليمف فهي تعيش على جلد أو ريش أو عشوش كثير من أنواع الطيور البرية ومن بينها طائر اليمام المصري والذي يصاب بأنواع حلم الريش والقمل والتي تسبب بعضها في إصابة عوائلها بالجرب. وقد تم إجراء هذه الدراسة لتقديم معلومات عن بعض أنواع الطفيليات الخارجية المصاحبة لطيور اليمام المصري وأعشاشها خلال العام وموسم التربية لها في المزرعة التجريبية لكلية الزراعة - جامعة الأزهر، فرع أسيوط، مصر.، ومن خلال الفحص السنوي أظهرت الدراسة النتائج التالية:

- تواجد طائر اليمام المصري بمستويات منخفضة خلال شهري مايو وسبتمبر. ثم يبدأ التزايد الطفيف خلال الشهور (يناير ، فبراير ، مارس ، يونيه ، أكتوبر) . ثم تحدث زيادة سريعة في التعداد خلال الشهور (نوفمبر ، ديسمبر ، أغسطس) ، حيث يصل التعداد إلى ذروته خلال شهري (أبريل ويوليه). وبدراسة الوفرة العددية للإناث والذكور البالغة أظهرت أن لهما نفس اتجاه التعداد تقريباً . ف كلا الجنسين يصل إلى أدنى مستوياتهم العددية خلال شهري (مايو وسبتمبر) وربما يرجع ذلك إلى عزوف هذا الطائر عن الدخول بالمصايد لتوفر الغذاء بالحقول المجاورة خلال هذه الفترة حيث يتزامن ذلك مع نضج المحاصيل الشتوية (القمح والبول البلدي) في شهر مايو ، ونضج المحاصيل الصيفية (الذرة الرفيعة - دوار الشمس) وأجران الذرة الشامية في شهر سبتمبر.

- لا يوجد اختلاف بين ذكور وإناث اليمام المصري في الإصابة بالطفيليات الخارجية فكلاهما على حد سواء.

- الطفيليات الخارجية الشائعة التي تم جمعها من طيور اليمام المصري وأعشاشها انقسمت إلى مجموعتين هما (اللحم Mites والحشرات Insects) في المنطقة محل الدراسة .

أولاً: مجموعة اللحم Mites :

بحصر أنواع الحلم التي تتواجد على أجسام وعشوش طائر اليمام المصري تم حصر وتصنيف 15 نوعاً من الحلم تابعة لثلاث مجموعات من الأكاروسات فقد وجد 11 نوعاً من مجموعة ذات الثغر المتوسط Mesostigmata تابعة لسبع فصائل أكاروسية هي (Macronyssidae - Digmasellidae - Ascidae - Phytoseiidae – Rhinonyssidae - Laelapidae - Otopheidomenidae) ، وثلاث أنواع من مجموعة ذات الثغر الأمامي Prostigmata تابعة لثلاث فصائل أكاروسية هي (Caligonellidae – Cheyletidae – Bdeiliidae) ، ونوعاً واحداً من مجموعة ذات الثغر الخلفي Metastigmata من فصيلة Argasidae.

ثانياً: مجموعة الحشرات Insects :

تم حصر وتصنيف نوعين من الأنواع الحشرية من أجسام وعشوش طائر اليمام المصري يتبعان رتبة القمل (Phthiraptera) واللذان ينتميان إلى فصيلتين هما فصيلة قمل الدجاج (Menoponidae) وفصيلة قمل الحمام (Philopteridae).

- أظهرت النتائج أيضاً تواجد نوع الحلم (*Ornithonyssus bacoti*) على أجسام وعشوش طائر اليمام المصري وهو من الأنواع الطفيلية المتواجدة على أجسام القوارض فهذه الطفيليات ذات أهمية طبية وبيطرية، وبالتالي تتطلب اهتماماً خاصاً لتلافي أضرارها ، حيث أنها تلحق ضرراً بالغاً بمزارع الإنتاج الحيواني والطيور الداجنة مسببة لها أمراض خطيرة قد تفنك بها ، لذا ينصح بوضع برنامج مكافحة يمنع اختلاط الطيور البرية بمزارع الإنتاج الحيواني وخاصة مزارع الدواجن حيث تعتبر نواقل للطفيليات الخارجية لها وهذا يعرض الثروة الداجنة للتدهور وقلة الإنتاج .