

Ecological Studies on Passeriformes in Old Areas At Maabda Island (Manfalot District), Assiut Governorate

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Received on: 3/3/2019

Accepted for publication on: 26/3/2019

Abstract

The aim of the present work is to study the ecological of some species of the order Passeriformes and estimate population density of hooded crow, *Corvus corone cornix* (L.) and house sparrow, *Passer domesticus niloticus* (L.) under three different habitats in old areas (Maabda Island -Manfalot district) at Assiut governorate. This study was conducted from January 2016 to December 2017. The results indicated that, the resident wild bird species recorded during the study period were as follow, three species of beneficial birds they were common bulbul, fantailed warbler and swallow. Also, two species of harmful birds they were hooded crow and house sparrow. Also, chiffchaff and white wagtail species as migratory and beneficial birds were recorded belonging to order Passeriformes. The highest numbers of hooded crow were in fields nearby trees and field crops. The lowest number was recorded in fields nearby buildings. Also, the highest numbers abundance of hooded crow were during February and September, followed by March, April and December. The highest number of house sparrow birds in old areas (Maabda Island) and Manfalot district was in fields nearby trees, followed by fields nearby buildings. The lowest number was in field crops. The highest general means were recorded during March, September and October. The highest number of this bird species was recorded during winter, followed by summer and autumn. While the lowest number was during spring 2016.

Keywords: survey, population, Passeriformes, birds and habitat.

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. Birds are a group of animals following to sub kingdom Metazoa and Phylum Chordata Class Aves, sub class Newornithes. The class Aves divided into 19 orders among them of which the order Passeriformes, which consists of 56 family and 5000 species. This order contains different species existing in different habitats in Egypt. The numbers of bird species were 515, the

resident birds are 186 bird species, 12 are extinct and 17 are endemic. The rest of bird species and subspecies (300 bird species) are migratory (Tharwat, 1997). Beneficial and harmful birds were divided to resident and migratory birds. Hooded crow, *Corvus corone cornix* (L.) and house sparrow, *Passer domesticus niloticus* (L.) were the resident birds in Egypt during all seasons of the year Metwally *et al.*, (2009). However, some granivorous bird species, having adapted to the agricultural habitats and increased in numbers, are conflicting with our goals of agricul-

tural production by causing economic losses to crops, fruits and stored grains. In addition, birds may be incriminated in transmitting the causative agents of plant diseases such as viruses bacteria and fungi. On the other side they may be considered as natural enemies to reptiles, Rodents, and harmful Insects when they feed on these pests in considerable amounts. Thereby the present study aimed to conduct: survey of Passeriformes in the different habitats in old areas (Maabda Island -Manfalot district) at Assiut governorate. And estimate population density of dominant bird species in the study area through two successive years.

Materials and Methods

The study was carried out under the field conditions in old areas (Maabda Island -Manfalot district) at Assiut governorate. The work has been conducted at three different habitats representing different environmental and ecological areas. These habitats were nearby each of (buildings, field crops and trees). The field trials started from January 2016 to December 2017.

Survey and distribution of some Passeriformes species:

The resident and migrant bird species were surveyed in old areas (Maabda Island -Manfalot district) at Assiut governorate during two successive years (2016 and 2017). In these trials, area size is two feddans inside the chosen cultivated habitat. The population of different bird species was counted in each habitat, by using the method of Redinger and Libay (1979) as a plot equivalent two feddans from the determined cultivated area in each habitat. The identi-

fication and counts of bird species were achieved by using field glass (binoculars) from rising position, which gave clear sighted vision of the plots. This work has been accomplished twice daily, the first at sunrise and second at sunset during One hour for three days monthly. Bird classifications were done according to (Sibley and Monroe 1990).

Population density of some Passeriformes species:

The population density of bird species were recorded monthly daytime (sunrise and sunset) at three different habitats nearby (buildings, field crops, and trees), during the period from January 2016 to December 2017 in old areas (Maabda Island -Manfalot district) at Assiut governorate to find the relationship between the population of bird species and different seasons of the year. The population density of some dominant bird species (i.e. hooded crow, *Corvus corone cornix* (L.) and house sparrow, *Passer domesticus niloticus* (L.) were studied in three different habitats as mentioned before. Birds activity was expressed by counting individuals of each bird species for one hour during different intervals i.e. before sunrise and before sunset. The population counts and species identification of birds were carried out by the field glass binocular.

Statistical analysis:

The obtained data of the population density was statistically analyzed using a randomized complete block design. Means were compared according to Duncan's Multiple Range test, at 0.05 level of probability.

Results and Discussion

Survey and distribution of some resident wild bird species:

Data in Table (1) indicated that, the resident wild bird species recorded during the study period were as follow, 3 species were recorded as beneficial birds and 2 species were recorded as harmful birds belonging to 5 families and one order (Passeriformes). These resident wild bird species were classified according to their families as follows: - (1) Family Brachypodidae was represented by one bird species which was recorded as beneficial species common bulbul, *Pycnonotus barbatus*. (2) Family Muscicapidae include one bird species which was recorded as beneficial species, fantailed warbler, *Cisticola juncidis*. (3) Family Corvidae was represented by one bird species which was recorded as harmful species, hooded crow, *Corvus corone cornix*. (4) Family Passeridae was represented by one bird species which was recorded as harmful species, house sparrow, *Passer domesticus niloticus*. (5) Family Hirundidae was represented by one bird species which was recorded as beneficial species, swal-

low *Hirundo rustica savignii*. The obtained data explained that, house sparrow *P. domesticus niloticus* was found in high numbers in the three habitats throughout the whole period of the study beginning from January 2016 to December 2017. While the hooded crow *C. corone cornix* was found in moderate numbers. On the other hand, common bulbul, *P. barbatus*; fantailed warbler, *C. juncidis* and Swallow, *H. rustica savignii* were found in a few numbers in the three habitats at Manfalot district. These results coincided with these obtained by Metwally *et al.*, (2009) surveyed 27 bird species belonging to 10 orders and twenty one families from different habitat in old land at Assiut governorate. Desoky and Omar (2015) surveyed 13 noxious and beneficial bird species belonging to different orders and families. Six noxious bird species were house sparrow, hooded crow, crested lark, palm dove, rock dove and little green bee. And 7 beneficial bird species were cattle egret, common bulbul, fantailed warbler, hoopoe, swallow and white wagtail.

Table 1. Survey and distribution of some resident wild bird species (Order: Passeriformes) in old areas (Maabda Island -Manfalot district) at Assiut governorate during 2016 and 2017.

Families	Common name	Resident bird species	Surveyed habitats		
		Scientific name	B	F	T
Brachypodidae	common bulbul	<i>Pycnonotus barbatus</i>	+	+	+
Muscicapidae	fantailed warbler	<i>Cisticola juncidis</i>	+	+	+
Corvidae	hooded crow	<i>Corvus corone cornix</i>	++	++	++
Passeridae	house sparrow	<i>Passer domesticus niloticus</i>	*	*	*
Hirundidae	swallow	<i>Hirundo rustica savignii</i>	+	+	+

B= Buildings F= Field crops T= Trees + = 1<10 ++ = 10<100 * = 100<500

Survey and distribution of some migratory wild bird species:

Data in Table (2) showed two bird species as migratory and beneficial birds were recorded during the study period belonging to two families and one order (Passeriformes) as follow:- (1) Family Sylviidae was represented by one bird species, chiffchaff *Phylloscopus collybita* was found in a few numbers nearby (buildings, field crops and trees). (2) One bird species belonging to family

Motacillidae was recorded, white wagtail *Motacilla alba alba* found in moderate numbers in three habitats at Manfalot district. Our results were in agreement with those of (El-Danasory 2006; Omar 2010; Mossallm 2017 and Hassan 2018) who cleared that, chiffchaff *Phylloscopus collybita* and White wagtail *Motacilla alba alba* were migratory birds at El-Menofia; Assiut and Sohag governorates.

Table 2. Survey and distribution of some migratory wild bird species (Order: Passeriformes) in old areas (Maabda Island -Manfalot district) at Assiut governorate during 2016 and 2017.

Families	Common name	Migratory bird species	Surveyed habitats		
		Scientific name	B	F	T
Sylviidae	chiffchaff	<i>Phylloscopus collybita</i>	+	+	+
Motacillidae	white wagtail	<i>Motacilla alba alba</i>	++	++	++

B= Buildings F= Field crops T= Trees += 1<10 ++ = 10<100

Population studies:

Monthly and seasonal population fluctuation of some wild birds:

The effect of habitat types and daytime on the population density of hooded crow, *C. corone cornix* and house sparrow, *P. domesticus niloticus* in old areas (Maabda Island - Manfalot district) at Assiut governorate were studied in three different habitats nearby (buildings, field crops and trees) from January 2016 to December 2017.

Population density of hooded crow, *Corvus corone cornix* (L.):

Data in Table (3) showed the highest values of hooded crow were in fields nearby trees with means (3.67 and 3.88 individuals) during 2016 and 2017. Next to, the general means, of the highest values were recorded in fields nearby the field crops

with means (2.38 and 2.08 individuals). Then the lowest values were recorded in the fields nearby buildings with means (1.33 and 1.92 individuals) during 2016 and 2017. The variation of the population density of hooded crow birds in the different habitat may be due to the differences in food quality or quantity in the different habitats. Data in Table (3) revealed that the highest value of abundance during February 2016 and 2017 with means (4.33 and 3.67 individuals) and September 2017 with mean (4.33 individuals). Followed by March, April and December 2016 and 2017 with means (3.17 and 3.17 individuals), (3.50 and 2.83 individuals) and (3.83 and 2.83 individuals), respectively. Moderate average numbers were recorded in January 2016 and 2017, May 2016, July 2017, August 2017 and November 2016 and

2017 with means (2.50 and 2.00 individuals), (2.50 individuals), (2.83 individuals), (2.67 individuals) and (2.33 and 2.17 individuals), respectively. Then, the lowest average numbers of hooded crow were recorded in June 2016 and 2017, July 2016, August 2016, September 2016 and October 2016 and 2017 with means (1.83 and 1.67 individuals), (1.33 individuals), (1.67 individuals), (0.83 individuals) and (1.67 and 1.50 individuals), respectively. EL-Sawy (2017) found that in old lands at Alexandria governorate high average

number of population fluctuation of dominant harmful bird species were (1062) and (1182) individuals, nearby trees, in Sep. 2014 & 2015 respectively. The lowest mean numbers of dominant birds were observed during (Dec. and Jan.) for both years (0.00 and 0.00 for 2014) and (0.00 and 1.50 for 2015) respectively. Mosallm (2017) found that the highest values of hooded crow were in March and October 2014 and February 2015 with (3.33 individuals) in Beni-Auday district, Assiut.

Table 3. Population fluctuation of hooded crow, *Corvus corone cornix* (L.) in old areas (Maabda Island) at Manfalot district on different habitats during (January 2016 to December 2017) in Assiut Governorate.

Months	2016				2017			
	habitats			Mean*	Habitats			Mean*
	Buildings	Fields	Trees		Buildings	Fields	Trees	
Jan.	2.00	2.50	3.00	2.50ab	3.00	0.50	2.50	2.00ab
Feb.	3.00	3.50	6.50	4.33a	1.50	3.50	6.00	3.67ab
Mar.	1.00	4.50	4.00	3.17ab	1.50	3.00	5.00	3.17ab
Apr.	2.00	3.50	5.00	3.50ab	2.50	2.50	3.50	2.83ab
May.	0.00	4.50	3.00	2.50ab	1.00	1.00	3.50	1.83ab
Jun.	0.00	2.00	3.50	1.83ab	1.00	1.50	2.50	1.67ab
Jul.	0.00	0.00	4.00	1.33ab	1.00	3.00	4.50	2.83ab
Aug.	0.50	2.50	2.00	1.67ab	2.00	2.00	4.00	2.67ab
Sep.	0.50	0.00	2.00	0.83b	4.00	4.00	5.00	4.33a
Oct.	1.50	1.50	2.00	1.67ab	0.00	1.00	3.50	1.50ab
Nov.	2.00	1.50	3.50	2.33ab	1.00	2.00	3.50	2.17ab
Dec.	3.50	2.50	5.50	3.83ab	4.50	1.00	3.00	2.83ab
Mean	1.33a	2.38a	3.67a	2.46a	1.92a	2.08a	3.88a	2.63a

*Means have the same letters are not significantly differed by using Duncan's analysis.

With respect to seasonal of population fluctuation of hooded crow birds in old areas (Maabda Island) at Manfalot district. Seasonal fluctuation of hooded crow birds in Manfalot district recorded the highest average numbers during winter 2016 and 2017 and summer 2017 with means (3.33 and 2.94 individuals) and (3.28 individuals). The moderate average numbers were recorded in spring 2016 and 2017 with means (2.61 and 2.11 individuals) and autumn 2016

and 2017 with means (2.61 and 2.16 individuals). While the lowest value was in summer 2016 (1.28 individuals). Bonnah (2007) revealed that the number of crows increased annually during the study period. In the first year second and third investigated year the percent number of Crow increased during spring followed by autumn. The number of crow's percent decreased during summer and winter.

Table 4. Seasonal fluctuation of hooded crow, *Corvus corone cornix* (L.) in old areas (Maabda Island) at Manfalot district on different habitats during 2016 and 2017 in Assiut Governorate.

Seasons	2016				2017			
	habitats			Mean	Habitats			Mean
	Buildings	Fields	Trees		Buildings	Fields	Trees	
Winter	2.00	3.50	4.50	3.33a	2.00	2.33	4.50	2.94a
Spring	0.67	3.33	3.83	2.61ab	1.50	1.67	3.17	2.11a
Summer	0.33	0.83	2.67	1.28b	2.33	3.00	4.50	3.28a
Autumn	2.33	1.83	3.67	2.61ab	1.83	1.33	3.33	2.16a
Mean	1.33b	2.38ab	3.67a	2.46a	1.92a	2.08a	3.88a	2.62a

* Means have the same letters are not significantly differed by using Duncan's analysis.

Population fluctuation of house sparrow, *Passer domesticus niloticus* (L.):

Data in Table (5) showed that, the highest average numbers of house sparrow birds in old areas (Maabda Island) at Manfalot district during 2016 and 2017 were in fields nearby trees with means (35.13 and 46.50 individuals) during 2016 and 2017 years, respectively. Followed by fields nearby buildings (22.08 and 26.04 individuals). The lowest average numbers were in field crops with means (12.13 and 13.50 individuals) during 2016 and 2017 years. The highest general means were recorded during March 2016 and 2017 with means (65.50 and 44.00 individuals); this may be due to the maturity (winter crops) such as wheat and broad bean crops in this period or the birds need to feed more during reproduction season. Also, the highest values were recorded during September and October 2016 and 2017 with means (39.33 and 45.17 individuals) and (34.50 and 47.00 individuals), may be due to the maturity of (summer crops) such as sorghum and sunflower crops. Regarding to the general means the moderate values (28.83

and 21.00 individuals) were recorded during February and November (28.83 and 26.00 individuals); April, May, June, July and August and November 2017 with means (31.67, 27.67, 21.33, 25.00, 24.50 and 27.33 individuals), respectively. While the lowest values were in January, December 2016 and 2017 with means (17.67, 18.50 and 14.67, 16.50 individuals), April, May, June, July and August 2016 with means (7.00, 9.67, 5.83, 7.00 and 17.50 individuals), respectively. Barakat-Noura (2016) revealed that, the highest values of wild bird species in Tanta district were in trees, field crops, buildings and water canals with average (250.5, 180.5, 138 and 104.5 individuals). Regarding to the general means the highest values were recorded during February 2014 and January 2014 with (134.62 and 92.5 individuals) while the lowest were in March 2013 with (0.5 individuals).

With respect to seasonal of population abundance of house sparrow birds in Manfalot district. Data in Table (6) showed that, Seasonal fluctuation of house sparrow birds in old areas at Manfalot district in Assiut governorate which gave the highest val-

ues during winter 2016 and 2017 with means (37.33 and 25.89 individuals), following by summer and autumn 2016 and 2017 season with means (21.28 and 31.55 individuals) and (26.33 and 30.28 individuals), respectively. Also, spring 2017 with mean (27.00 individuals). While the lowest value was during spring 2016

with mean (7.50 individuals), Hassan (2018) revealed that the highest value of house sparrow, *Passer domesticus niloticus* (L.) birds were in autumn 2014 and 2015. Followed by summer 2014 and 2015. While, the low level of population was recorded in spring 2014 and 2015, followed by winter 2015 and 2016 in Sohag governorate.

Table 5. Population fluctuation of house sparrow, *Passer domesticus niloticus* (L.) in old areas (Maabda Island) at Manfalot district on different habitats during (January 2016 to December 2017) in Assiut Governorate.

Months	2016				2017			
	habitats			Mean	habitats			Mean
	Buildings	Fields	Trees		Buildings	Fields	Trees	
Jan.	15.00	7.00	31.00	17.67bcde	12.00	8.50	23.50	14.67cde
Feb.	27.00	10.50	49.00	28.83bcde	16.00	10.50	36.50	21.00bcde
Mar.	69.00	40.00	87.50	65.50a	58.50	18.50	55.00	44.00abc
Apr.	5.50	4.00	11.50	7.00e	27.00	18.00	50.00	31.67bcde
May.	9.00	4.00	16.00	9.67de	27.50	8.50	47.00	27.67bcde
Jun.	5.00	2.50	10.00	5.83e	11.50	11.00	42.50	21.33bcde
Jul.	5.50	3.50	12.00	7.00e	19.00	8.00	48.00	25.00bcde
Aug.	21.50	11.00	20.00	17.50bcde	28.00	10.50	35.00	24.50bcde
Sep.	37.00	18.50	62.50	39.33abcd	38.00	24.50	73.00	45.17abc
Oct.	35.50	25.00	43.00	34.50bcde	43.00	33.50	64.50	47.00ab
Nov.	21.00	13.50	43.50	26.00bcde	17.00	10.00	55.00	27.33bcde
Dec.	14.00	6.00	35.50	18.50bcde	15.00	6.50	28.00	16.50bcde
Mean	22.08ab	12.13b	35.13a	23.11a	26.04ab	13.50b	46.50a	28.65a

* Means have the same letters are not significantly differed by using Duncan's analysis.

Table 6. Seasonal fluctuation of house sparrow, *Passer domesticus niloticus* (L.) in old areas (Maabda Island) at Manfalot district on different habitats during 2016 and 2017 in Assiut Governorate.

Seasons	2016				2017			
	Habitats			Mean	habitats			Mean
	Buildings	Fields	Trees		Buildings	Fields	Trees	
Winter	37.00	19.17	55.83	37.33a	28.83	12.50	38.33	25.89a
Spring	6.50	3.50	12.50	7.50b	22.00	12.50	46.50	27.00a
Summer	21.33	11.00	31.50	21.28ab	28.33	14.33	52.00	31.55a
Autumn	23.50	14.83	40.67	26.33ab	25.00	16.67	49.17	30.28a
Mean	22.08ab	12.13b	35.13a	23.11a	26.04ab	13.50b	46.42a	28.65a

* Means have the same letters are not significantly differed by using Duncan's analysis.

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دراسات بيئية على العصفوريات (Passeriformes) في الأراضي القديمة بجزيرة المعابدة (مركز منفلوط) - محافظة أسيوط

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الملخص

استهدفت الدراسة البيئية حصر بعض أنواع الطيور البرية التابعة لرتبة العصفوريات (Order: Passeriformes) وكذلك دراسة كثافة المجموع لأهم الأنواع السائدة في الأراضي القديمة بجزيرة المعابدة (مركز منفلوط) بمحافظة أسيوط حيث تم اختيار ثلاثة بيئات زراعية مختلفة في منطقة الدراسة هي (بيئة زراعية مجاورة للمباني - بيئة زراعية مجاورة للحقول الزراعية - بيئة زراعية مجاورة للأشجار) وذلك خلال فترة دراسة استمرت لمدة عامين متتاليين بدأت من شهر يناير ٢٠١٦ إلى شهر ديسمبر ٢٠١٧م ، وبسبب تنوع ووفرة الغذاء في هذه البيئات جعلها مأوى للعديد من أنواع الطيور البرية المقيمة والمهاجرة التي تنتمي لرتبة العصفوريات.

ومن خلال الحصر أظهرت الدراسة النتائج التالية:

- حصر وتسجيل (٥) أنواع من الطيور المقيمة منها (٣) أنواع مفيدة وهي : طائر البابل المصري (*Pycnonotus barbatus L.*) ، طائر هازجة مروحية الذنب (*Cisticola juncidis L.*) ، وطائر الخفاف المصري (*Hirundo rustica savignii L.*) ، ونوعان من الطيور الضارة وهما طائري: الغراب البلدي (*Corvus corone cornix L.*) ، وعصفور النيل الدوري (*Passer domesticus niloticus L.*). كما تم تسجيل نوعين من الطيور المهاجرة والمفيدة وهما: السكسكة (*Phylloscopus collybita L.*) وطائر الفتح الأبيض (أبوفصادة) (*Motacilla alba alba L.*)

- وبدراسة الكثافة العددية لأنواع الطيور الضارة بالمزروعات السائدة في المنطقة محل الدراسة مثل الغراب البلدي (*C. corone cornix L.*) ، وعصفور النيل الدوري (*P. domesticus niloticus L.*) أظهرت النتائج أن أعلى تعداد لطائر الغراب البلدي تم تسجيله في شهري فبراير وسبتمبر، يليهما الشهور الثلاثة، مارس وأبريل وديسمبر.

- وبالنسبة لتسجيل المجموع خلال فصول السنة، أظهرت النتائج أن فصل الربيع كان أعلى فصول السنة ووفرة عددية لطائر الغراب البلدي مقارنة بالفصول الأخرى.

- سجل عصفور النيل الدوري أعلى تعداد خلال شهر مارس لنضج المحاصيل الشتوية مثل الفول البلدي وتزامن الطور العجيني لمحصول القمح المفضل للعصافير خلال هذه الفترة ، وكذلك شهري سبتمبر وأكتوبر بسبب نضج المحاصيل الصيفية في ذلك الوقت مثل الذرة الرفيعة ودوار الشمس.

- بصفة عامة، فيما يتعلق بنوع البيئة الزراعية ارتبطت ووفرة التعداد بنوع البيئة الزراعية حيث سجل أعلى تعداد لطائر الغراب البلدي في البيئة الزراعية المجاورة للأشجار (اماكن التعشيش) يليها البيئة الزراعية المجاورة للحقول الزراعية حيث ووفرة الغذاء. بينما سجل عصفور النيل الدوري أعلى تعداد في البيئة الزراعية المجاورة للأشجار ، يليها البيئة الزراعية المجاورة للمباني ، بينما أقل تعداد كان في البيئة الزراعية المجاورة للحقول الزراعية.

- توصي الدراسة بتجنب زراعة المحاصيل المحببة للطيور والمعرضة للإصابة بها مثل القمح ، الفول البلدي شتاءً ، والذرة الرفيعة ودوار الشمس صيفاً بجوار الأشجار والمباني لتحقيق أقل خسارة ممكنة تنعكس إيجابياً على إنتاجية الفدان وكمية المحصول.