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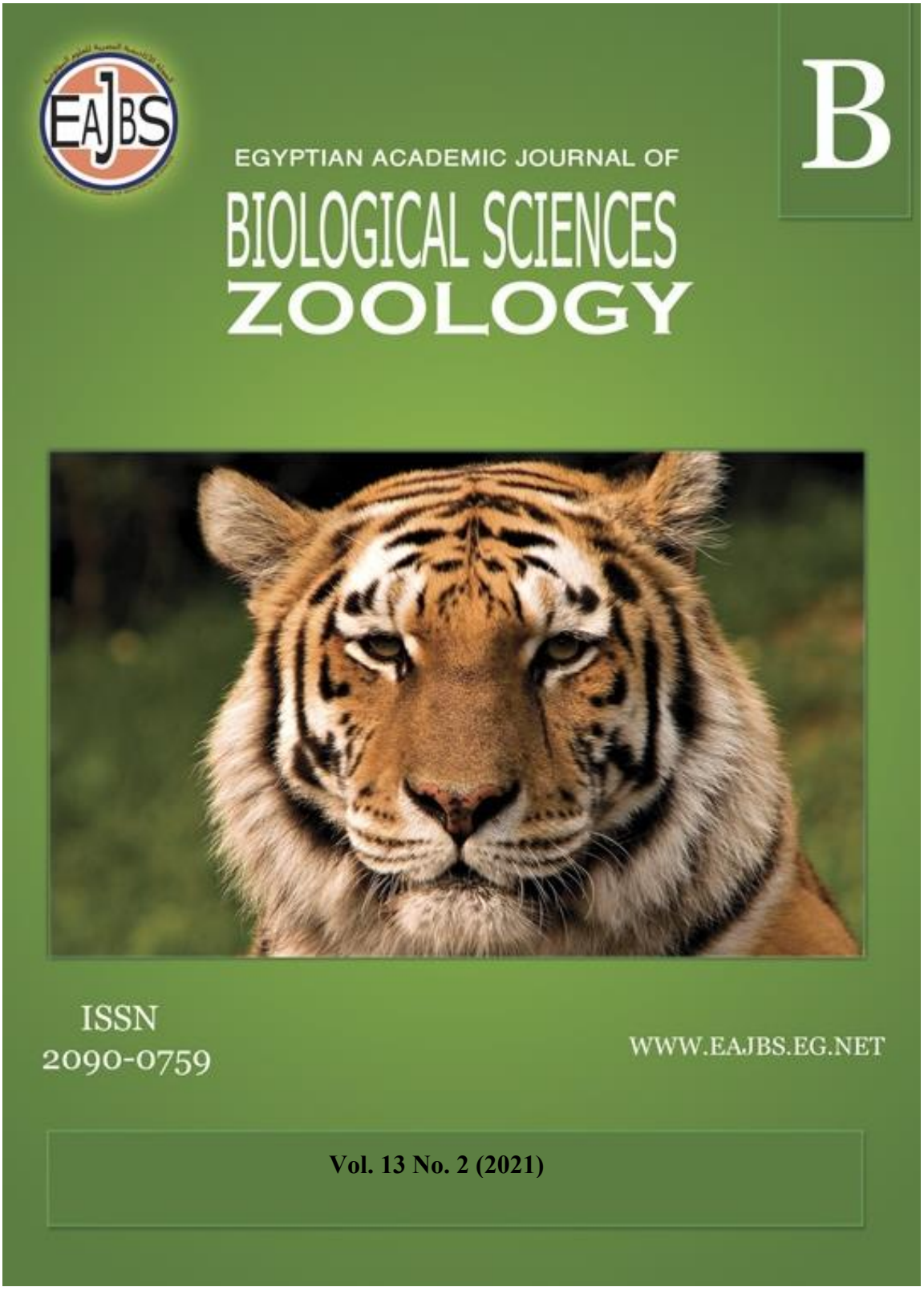

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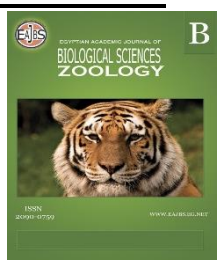

Damage In Wheat Fields Caused by The House Sparrow (*Passer domesticus niloticus* Nicoll and Bonhote, 1909) At Sharkia Governorate, Egypt

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ABSTRACT

The damage in wheat fields caused by the house sparrow, *Passer domesticus niloticus* Nicoll and Bonhote, 1909 was estimated around different distances of certain sites at Sharkia governorate. Results revealed that wheat fields nearby houses significantly showed the highest values of damage (24.41%); whereas, wheat fields around animal husbandries significantly recorded median values of damage (16.53%). The lowest value of loss in wheat (7.87%) was significantly investigated in fields lay around fruit orchards. On the other hand, the damage caused by the house sparrow decreased with increasing the distances around the tested sites. The rate of damage in wheat fields due to house sparrow attack showed the highest value (50.01%) nearby houses; while, it gradually decreased to 33.87% around animal husbandry and 16.12% around fruit orchards. But, the rate of damage recorded the highest values of 80.33% at 10 meters; sharply decreased to 14.20% at 25 meters and 5.47% at 40 meters.

INTRODUCTION

The House Sparrow (*Passer domesticus niloticus* Nicoll and Bonhote, 1909) is a worldwide distribution having a variety of habitat types under a wide range of climatic conditions, and it is considered a natural enemy to several harmful insects when they feed on them in considerable amounts (El-Deeb, 1991; Abd El-Gawad *et al*., 2004; Hassan, 2008; Abbassy *et al*., 2012). Now, the house sparrow, *Passer domesticus niloticus* is thought to be one of the serious pests of cereal crops in Egypt and many countries all over the world (El-Deeb, 1991; Abd El-Gawad *et al*., 2004; Omar *et al*., 2011, Kale, *et al.,* 2012 and Omar & El-Danasoury, 2014). During certain seasons of the year, it forages in the cropland in large numbers. Such foraging flocks damage the standing crops to a great extent. As the house sparrow has a great predilection for maturing seeds, it inflicts great damage on the maturing crops of wheat, broad bean, sorghum and sunflower. In fact, sparrow damage to cereal crops represents a serious problem as the losses reach up to 10% of the yield (Khattab *et al.*, 2001; Omar, 2005; Mostafa *et al.*, 2008 and Omar, 2010). The sparrow damage is thought to be one of the factors that severely constrain the efforts for achieving self-sufficiency in food

production. In addition, Berigan, *et al.* (2020) ensured that House Sparrow (*Passer domesticus*) populations declined across much of their global range in the late 20th century. Also, Jokimaki, *et al.* (2021) obvious that changes in winter feeding food supply from oats and sunflower seeds to more diverse small-sized seeds have been probably beneficial. Planting shrub fences will offer safe places for sparrows against predators. We assume that the use of citizen science will help us to understand in more detail the population status and trends of sparrow species. The sparrow problem in Egypt is complex and widespread, varying in size and magnitude from area to other area depending on the variety of cereals grown, the date of ripening of the crops and geographic location of a given area. Generally, the early-grown crops are more vulnerable to house sparrows, especially the areas which are nearby of the buildings, animal husbandry, trees and orchards. A number of factors help the local house sparrow in maintaining a high population level in the study area. Extensive areas under cereal crops, availability of trees for roosting and an ever-increasing number of huts and houses, where most of the sparrow's nest, create an ideal ecological situation for the sparrow to breed and multiply to pest proportions.

The current study aims to estimate the losses the house sparrow inflicts on the standing wheat crops neighbouring houses, animal husbandry and fruit orchards at Malamis village, Miniat El-Kamh district, Sharkia governorate.

MATERIALS AND METHODS

Study Area and Sites:

The field experiment was carried out at Malamis village, Meniat El-Kamh district, Sharkia governorate during the 2020 season to assess the damage caused by the house sparrow, *Passer domesticus niloticus* (L.) in the wheat crop which cultivated around houses, animal husbandry & fruit orchards.

Assessment Damage on Wheat:

Three fields (two feddans of each) were randomly selected in the experimental areas. The wheat field was divided into four plots. In each one, 10 samples were taken and repeated five times in each distance. Three distances were chosen at 10, 25 and 40 meters from the borders towards the middle of the cultivated area. The attacked plants and ears were estimated as a percentage of the total examined plants or ears. The percentages of damaged and undamaged plants were calculated by using the following equation:

$$\%\ \text{damage} = \frac{\text{No. of damage ears}}{\text{Total No. investigated ears}} \text{ x } 100$$

The obtained data were subjected to the analysis of variance. The values of L.S.D. at 0.05 was used to compare the means of treatments according to Steel and Torrie (1984).

RESULTS AND DISCUSSION

As shown in Table (1), with respect to the field sites, the damage in wheat fields nearby houses significantly showed the highest values of damage (24.41%); whereas, wheat fields around animal husbandries significantly recorded median values of damage

(16.53%). The lowest value of loss wheat (7.87%) was significantly investigated in fields lay around fruit orchards. On the other hand, the damage caused by the house sparrow decreased with the increasing distances around the tested sites and significantly recorded the highest damage values (39.21%) around the tested sites by 10 meters. The damage at 25 and 40 meters insignificantly showed 6.93 and 2.67%, respectively.

Table 1: Damage percentage of the house sparrow in wheat fields at different locations and distances at Sharkia Governorate**.**

Location	Damage (%) Distance (Meter)			Damage Average (%)
	10	25	40	
Housing Belt	60.84 a	8.40 d	4.00 d	24.41 A
Husbandry Belt	42.40 b	5.20 d	2.00 d	16.53 B
Orchard Belt	14.40 c	7.20 d	2.00 d	7.87 C
Average (%)	39.21 A	6.93 B	2.67 B	
"F' value of location	49.64**			
"F" value of distance	290.99**			
"F" value of location × distance	41.63**			

On the other hand, regarding the site of fields, the rate of damage in wheat fields (Fig. 1) due to house sparrow attack in Sharkia governorate, showed the highest value (50.01%) nearby houses and gradually decreased to 33.87% around animal husbandry and 16.12% around fruit orchards. But, respecting the distance of wheat fields, the rate of damage (Fig., 2) recorded the highest values of 80.33% at 10 meters that sharply decreased to 14.20% at 25 meters and 5.47% at 40 meters.

These results are in agreement with those obtained by El-Bakoury (1981) that recorded the damage caused by the house sparrow was concentrated beside the field edge and decreased gradually towards the middle of wheat and sorghum fields. Also, Metwally *et al*. (1995) reported that the average of bird damage to wheat, barley, rice, maize, sorghum, sunflower, broad bean and beas varied according to the type of habitats. The highest bird damage occurred in crops nearby buildings; while, the lowest damage was in those nearby poultry farms. Tolba (1999) reported that the highest damage was recorded in the first 10 meters and decreased gradually towards the field center in the two tested wheat varieties (Giza 164 and Sakha 69). El-Danasoury (2006) mentioned that the highest total percentage of damage caused by *Passer domesticus niloticus* individuals on wheat fields nearby buildings and orchards insignificantly were (14 and 13%) during the 2003 season at El-Behira governorate. Kandil and Mobarak (2017) surveyed wild bird species at El-Wady El-Gadid governorate during the two successive years of 2014 and 2015. The authors stated average damage percentages caused by house sparrow to rice crop, at Gharb El-Mawhob, were high (43.09% and 33.19% during the 2014 and 2015 seasons, respectively). Whereas, the average damage percentages caused by sparrow to the wheat crop, at El-Dakhla, were 4.46% and 3.56% during the 2014 and 2015 seasons, respectively. Issa and El-Bakhshawngi (2018) reported that guava fruits were vulnerable to house sparrow (*Passer domesticus niloticus* Nicoll and Bonhote, 1909) which caused losses of 4.79 and 4.64% in orchards nearby poultry farms and those nearby field crops, respectively. Issa *et al*. (2019) reported, in a wheat crop experiment at Sharkia governorate, that the house sparrow *P. domesticus niloticus* attacked the spikes of wheat with the highest percentage of damage (14.82%) during the 6th week when spikes emergence.

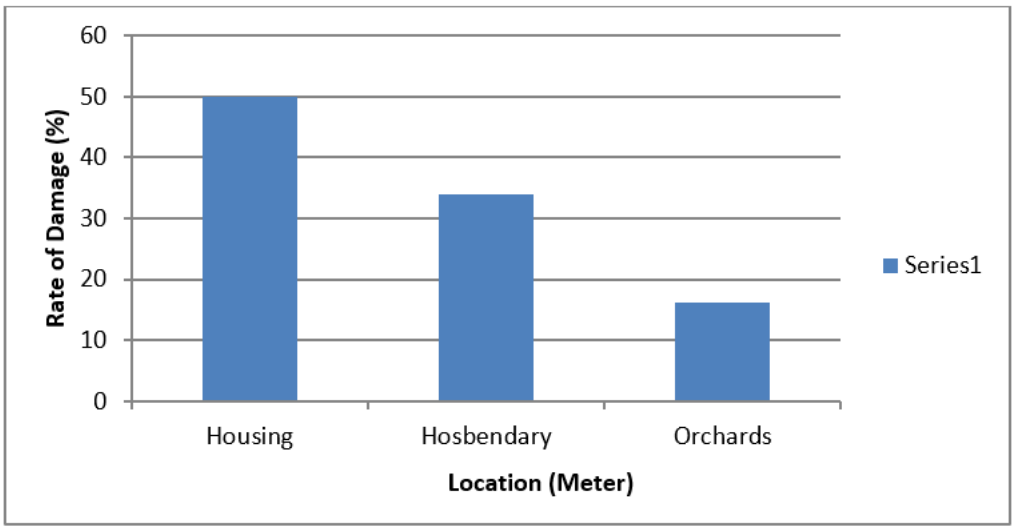

Fig.1: Rate of damage in different locations of wheat fields caused by house sparrow in Sharkia governorate.

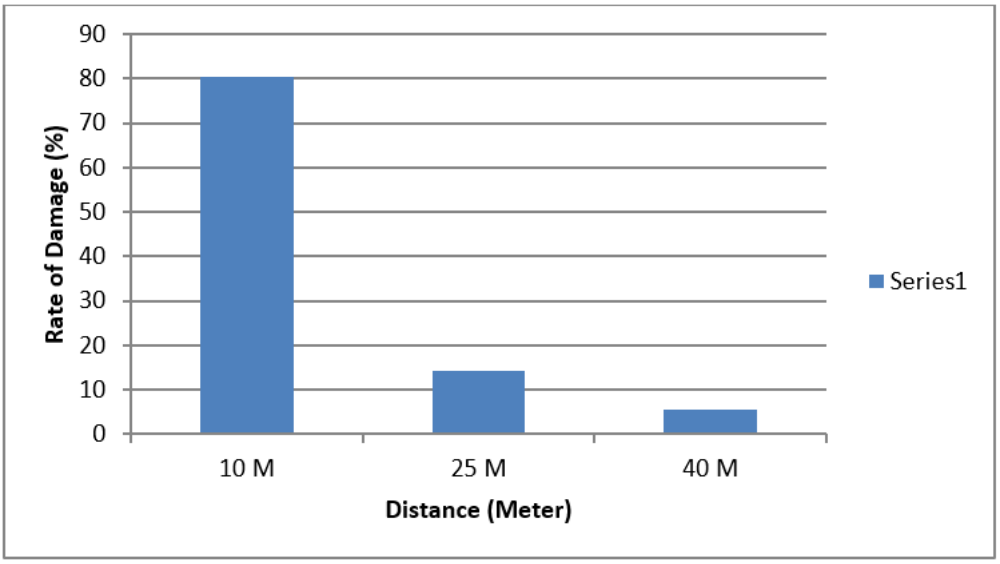

Fig. 2: Rate of damage in different distances of wheat fields caused by house sparrow in Sharkia governorate.

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ARABIC SUMMARY

الضرر فى حقول القمح الناتج عن عصفور النيل الدورى فى محافظة الشرقية، مصر

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تم تقدير الضرر الناجم عن عصفور النيل الدورى فى حقول القمح على مسافات محددة من مواقع مختلفة بمحافظة الشرقية. اثبتت النتائج وجود خسائر عالية المعنوية فى حقول القمح المحيطة بالمنازل (24.41%)، بينما كانت نسبة الضرر فى الحقول المحيطة بحظائر المواشى متوسطة (16.53%). وسجلت حقول القمح المجاورة لبساتين الفاكهة نسبة قليلة بدرجة معنوية من الضرر (7.87%). ومن ناحية أخرى فقد انخفض الضرر الناتج عن عصفور النيل الدورى فى حقول القمح مع زيادة المسافة عن المواقع المختبرة. كان معدل الضرر فى الحقول المجاورة للمنازل اعلاه (50.01%) والذى انخفض تدريجيا الى 33.87% حول حظائر المواشى و 16.12% حول بساتين الفاكهة. فى حين بلغت نسبة الضرر 80.33% على مسافة 10 أمتار من الموقع المختار والتى انخفضت بشدة الى 14.20% على مسافة 25 متر و 5.47% على مسافة 40 مترا.