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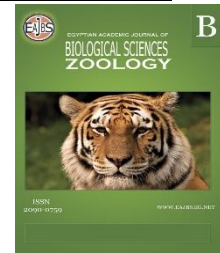


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## House Crow Habitats and Habits: A Suez Governorate (Egypt) Baseline Long-Term Study

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### ABSTRACT

The house crow has a notorious reputation for being a problem species in both native and foreign countries because of its multiplicity of approaches to adaptation and the consequent economic damage. In this context, the purpose of the current study is to elucidate the daily habits and population fluctuations of the house crow community in Suez Governorate, Egypt. The results indicated a substantial variation in the daily activity of the house crow based on the differences in the nature of the habitat. The highest numbers were recorded during the summer months (July to August) in parking and buildings during the sunset period, highlighting the drop in the first season's overall average compared to the second season. It is noted that the semi-annual average for the period from June 2020 to December 2021 significantly increased from the general average for the same period during the second season (60 and 49), respectively.

### INTRODUCTION

House crow, *Corvus splendens* considers one of the most common and adaptive Corvidae family (Passeriformes, Aves), (Monirul and Midzhanur, 2017 and Behrouzi-Rad, 2010).

It has a steady population through an enormous range (Iqbal *et al.*, 2022). Its native countries include Nepal, Bangladesh, India, Pakistan, Sri Lanka, the Maldives, the Laccadive Islands, South West Thailand, and coastal southern Iran. It is widely distributed throughout southern Asia (Antony, 2016). It was brought to Australia (currently beginning to become smaller) by ship after being introduced to Africa in about 1897. Being an omnivorous scavenger has enabled it to thrive. It is connected to all types of human habitation, from rural to city areas (Radadia, 2013). This species has increased proportionally as the human population has increased in the locations it inhabits. The house crow can utilize resources very adaptable, appears to be connected with people, and no populations are known to live without humans (Krzemińska *et al.*, 2018 and Fraser *et al.*, 2015). The invasive potential for the species is great all over the tropical and subtropical regions (Jayamanne and Jayamanne, 2012 and Brook *et al.*, 2003).

In Egypt, it was first recorded around the Northeast region (Peter *et al.* 1980 and Goodman *et al.* 1986). Some previous studies have been conducted on the house crow,

both from the agricultural view; attacking crops (Khattab *et al.*, 2002); used as a bio-agent to reduce the number of some types of rodents and insects (Kamel, 2014, Issa, 2019, Shivambu *et al.*, 2020 and Ndimuligo *et al.*, 2022).

In addition to some studies on the biology of the house crow (Ali, 2008, Ranjan and Kushwaha, 2013), and its transmission to many micro-pathogens to humans and their domesticated animals (Nyari *et al.*, 2006 ; Fadel and Afifi, 2017)

Where, these studies indicated the diversity and difference in the distribution of the crow and the different nature of its habitats, as well as the difference in the nature of the population and the extent and type of its daily activity, according to the human activities prevalent in the area under study (Archer, 2001 and Alias and Hashim, 2016).

On the other hand, the current study areas have significant economic and geographical importance. Its coast is located on the northern edge of the Gulf of Suez, where the southern entrance to the Suez Canal is located, and its area is 9,002 km<sup>2</sup>. It is distinguished by its unique location, as it is considered a gateway to Africa and southwestern and eastern Asia, making it a crossroads for global trade and a fortress for industry and industrial investment. With the urban expansion in this area, the house crow has become a notable example of a well-known species that has become a nuisance to birds (Ryall, 2016 and Chakraborty *et al.*, 2020).

According to Peter *et al.*, (1980). The house Crow was introduced to Egypt from India in the last 30 years and now mostly breeds in the towns near the Suez Canal and Gulf of Suez. Therefore, the purpose of the current study is to elucidate the population fluctuations and daily habits of the house crow community in Suez Governorate.

## MATERIALS AND METHODS

The daily activities and the population fluctuations of house crows were studied monthly during daytime (Sunrise and Sunset) at two locations each of them containing three different habitat locations nearby (landscapes, gardens and buildings) in Suez district during the period from June 2020, to May 2022 at Suez Governorate to find the relationship between the population of birds and different locations and seasons of the year. Daily activities and population fluctuations of house crows were studied monthly, in the three different habitats chosen as mentioned before from June 2020, to May 2022.

Identification of house crow was done based on Ali's field guide (Ali, 2002). The population counts were carried out by the field glass binoculars, in the three locations which were mentioned above according to methods described by Redinger and Libay (1979). Habits and behavior of house crow were expressed by counting individuals for one hour during different intervals i.e. at sunrise and sunset according to methods described by Reynolds *et al.*, (1980).

### Data Analysis:

The experiment was designed with a randomized complete design. All the data were subjected to Analysis of Variance (ANOVA) using the IBM SPSS package. The means were compared according to Duncan's multiple range tests at  $P \leq 0.05$  (Duncan, 1955).

## RESULTS AND DISCUSSION

The data indicates a substantial variation in the daily activity of the house crow based on the differences in the nature of the habitat. Data presented in **Tables (1 and 2)** and illustrated in Figures (1,2 and 3), generally revealed that the daily activity recorded the largest population during the sunset period in parking and buildings, with a monthly

average for the period from June to December during 2020–2021 (78 and 78) and (66 and 63) respectively during the same period during 2021–2022. Noting the drop in the first season's overall average compared to the second season (fig.3), where, it is noted that the semi-annual average for the period from June 2020 to December 2021 significantly increased from the general average for the same period during the second season (60 and 49), respectively.

Also, data recorded that the high number of individuals of House crow during June 2020-2021 recorded in August with 407 followed by 394 during July and Sep. while the low number individuals recorded during December and October with 306 and 314 individuals, compared to the same period during June at May 2021-2022, the high population recorded during June followed by Sep. with 320 and 315 individuals. While the low number of individuals was recorded during Apr. and May with 188 and 193 individuals. On the other hand, the high numbers were recorded nearby parking, buildings and landscapes during 2020-2021, (1845, 1836 and 561) respectively, and at buildings, parking and landscapes (1346, 1326 and 374) during 2021-2022, respectively.

The values (1216 and 1195) nearby buildings and parking (936 and 880) nearby parking and buildings were recorded as high numbers at sunset during (2020-2021) and (2021-2022) respectively. These results agree with Meininger *et al.*, (1980), Behrouzi-Rad, (2010) and Attia, (2013). Moreover, our findings concur with Hassan, (2018) and Tan *et al.*, (2020) who indicated that house crows are distributed with high numbers in the inhabited area, public parks, and hospital areas and with a low number downtown.

#### Author's Contribution

*All authors are equal across all phases of this manuscript*

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*This research did not receive any funds.*

#### Availability of data and materials

*All data regarding this study are shown in the manuscript.*

#### Conflict of interest

*The authors have declared no conflict of interest.*

**Table 1:** Population fluctuation and daily activities of House crow, *Corvus splendens* at Suez Governorate from June 2020 to May 2021.

Months	Habitats									Total	Mean
	Buildings			Landscape			Parking				
	S.R.	S.S.	D. Av	S.R.	S.S.	D. Av	S.R.	S.S.	D. Av		
June, 2020	51	113	82	21	33	27	72	85	79	375	63 cd
July	53	120	87	22	32	27	69	98	84	394	66 bc
August	57	103	80	26	32	29	69	120	95	407	68 bc
September	63	105	84	24	29	27	63	110	87	394	66 bc
October	51	95	73	16	23	20	39	90	65	314	52 e
November	50	95	73	19	26	23	45	103	74	338	56 cde
December	49	85	67	17	25	21	42	88	65	306	51 e
Total	374	716	545	145	200	173	399	694	547	2528	421
Mean	53	102	78	21	29	25	57	99	78	361	60
June, 2021	44	103	74	17	24	21	50	98	74	336	96 b
February	51	95	73	21	26	24	48	100	74	341	97 b
March	48	108	78	19	28	24	51	105	78	359	103 a
April	54	93	74	20	20	20	51	103	77	341	97 b
May	44	103	74	18	22	20	51	95	73	333	95 b
Total	241	502	373	95	120	109	251	501	376	1710	488
Mean	48	100	74	19	24	22	50	100	75	342	98

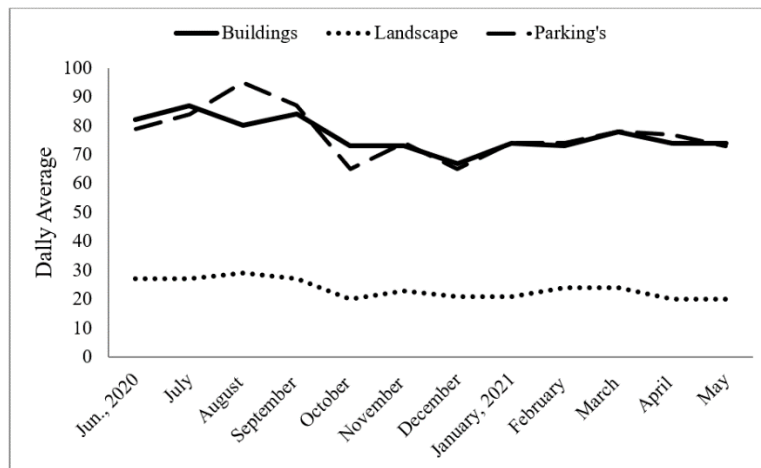
Times of investigations; S.R. = sun-rise, S.S. = sun-set.

DAv. = Dally Average number

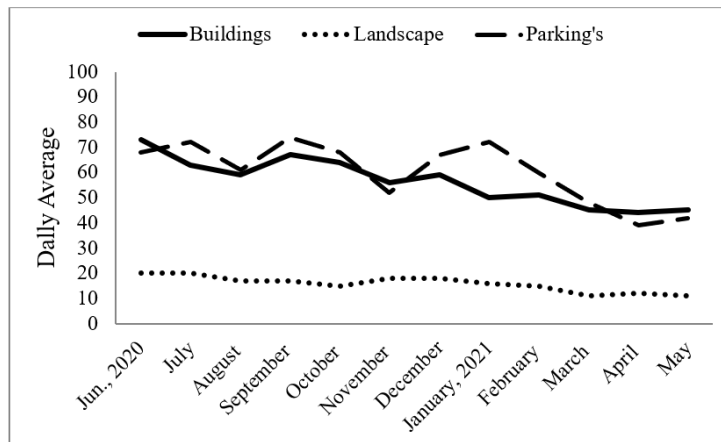
**Table 2:** Population fluctuation and daily activities of House crow, *Corvus splendens* at Suez Governorate from June 2021 to May 2022.

Months	Habitats									Total	Mean
	Buildings			Landscape			Parking				
	S.R.	S.S.	D. Av	S.R.	S.S.	D. Av	S.R.	S.S.	D. Av		
January, 2021	53	92	73	14	26	20	47	88	68	320	53a
July	42	83	63	17	22	20	48	95	72	265	51a
August	41	77	59	15	19	17	42	80	61	274	46ab
September	39	95	67	15	19	17	47	100	74	315	53a
October	45	83	64	12	18	15	47	88	68	293	49ab
November	39	73	56	15	21	18	47	57	52	252	42ab
December	42	75	59	13	22	18	51	83	67	286	48ab
Total	301	578	440	101	147	124	329	591	460	2005	341
Mean	43	83	63	14	21	18	47	84	66	286	49
January, 2021	36	63	50	13	18	16	50	93	72	273	46ab
February	38	63	51	10	19	15	41	78	60	249	42ab
March	32	58	45	9	13	11	32	63	48	207	35bc
April	29	58	44	11	12	12	25	53	39	188	31c
May	29	60	45	8	13	11	25	58	42	193	32c
Total	164	302	235	51	75	65	173	345	261	1110	186
Mean	33	60	47	10	15	13	35	69	52	222	37

Times of investigations; S.R. = sun-rise, S.S. = sun-set.  
 Av. = Daily Average number



**Fig. 1.** Average daily activity of House crow during summer season, 2020 and winter season, 2021 in different urban sites at Suez Governorate.



**Fig. 2.** Average daily activity of House crow during summer season, 2021 and winter season, 2022 in different urban sites at Suez Governorate.

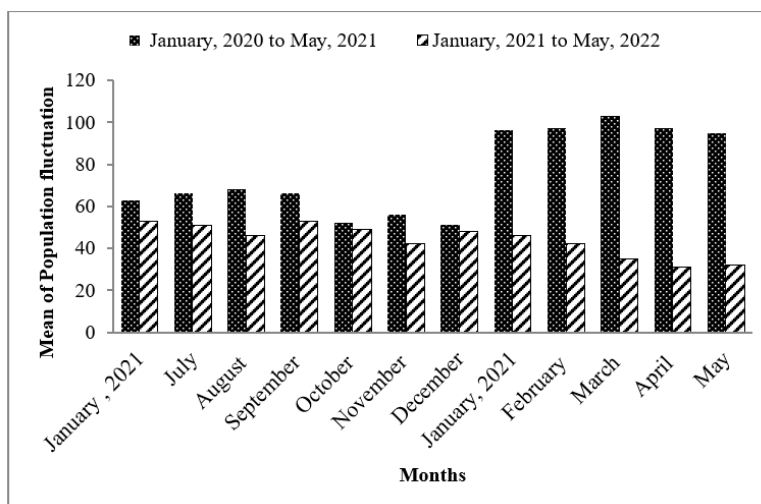


Fig. 3. Population fluctuation of House crow during summer season, of 2021 and winter season, of 2022 in different urban sites at Suez Governorate.

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