



## Crow counted and its control with zinc phosphide bait methods in Giza Governorate

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### Abstract:

Crows of birds are wide world, with some harmful environmental effects. It was recorded in many Governorates of Egypt, attacking plants and animals production causing visible losses. This study was conducted at Al-Saff district, Giza Governorate to survey species and their numbers in different habitats during 2018-2020 and how to control them with zinc phosphide. Only species, hooded crow, *Corvus corone* L.) Aves: Corvidae ) recorded in old agriculture land, reclaimed land and city. The highest number recorded during spring in May then decrease through autumn, summer and winter the lowest count in February at old agriculture land and reclaimed. In city the count was highly during autumn in October then reduce in spring, summer and winter the lowest birds recorded in February. The total numbers increase from 2018 to 2020 and the increase percent were 15.5, 17.9 and 8.8% to each habitat respectively. The population crow was highly in reclaimed land comparing with old land and city, the average number were 255, 232 and 166 birds to each habitat respectively. When using fish bait 1% and 0.5% zinc phosphide directly the reduction percent of birds reach to 52.5% and 48.5%. While the percentage of reduction increased to 54.5% with fish without Zinc phosphide as pre-baiting before zinc phosphide fish bait 0.5%.

### Introduction

Crows are one of the world's most widespread birds. Barry *et al.* (2003) mentioned that the species of crows are spreading in more than 25 region including Africa, Middle East and Southeast Asia. These species are associated with human activity, acclimatized in different habitats, and have a negative impact on the environment. India is the home of house crows, *Corvus splendens* Vieillot )Aves: Corvidae ) while,

Australia is the home of the hooded crows, *Corvus corone* L. (Aves: Corvidae ). Crows are rapidly growing as the House crows have grown 30 times in 2033 compared to 1985 in Singapore. Their numbers are increasing due to the availability of shelter, food, and absence of vital enemies and control programs. Ryall (1992 ) and GISD reported that crows feeding on wide range of foods, small reptiles, amphibians, birds, mammals,

insects, fishes, domestic animals, crops, vegetables, fruits and food waste. In Egypt, some species of crows existed in different habitats, where they recorded the economic limit of the damage. Goodman *et al.* (1989) reported that hooded crow, *C. corone* recorded in parts of Nile delta and valley of south to Aswan, Suez Canal, Fayoum and Northeastern Sinai. Hassan (2008) surveyed hooded crow *C. corone* in all habitats of Qalubya, Sharkia, Ismailia, Suez and Sohag Governorates. In Ismailia, the numbers of crows were differently according to months, seasons and areas. Generally, the highest numbers recorded during spring, autumn, summer and winter, respectively. Tharwat, 1997; Khattab, 2002 ; Bonnah, 2007; Dhinds *et al.* (1991) and Feare and Watson (1990) clear that crows are environmentally harm because of their disturbing sound and the terror they cause to humans to steal food and attack crops, vegetables, fruits and animal production farms. Kamel (2014) reported that, house crows *C. splendens* established in Ismailia governorate and the crows are perceived as a risk to human health and their crops. They have damage fruits, mango, guava, cantaloupe, dates, fig, tomato, cucumber, grape, strawberry, watermelon and crops, wheat, green beans, cabbage, barley, peanut, rice in Abou Swier and Almaif cities. She recommended, pay attention to hygiene and capture for adult birds, especially before meeting season, and to conduct more of the biological and behavioral studies to controlling crows. Crows transmit many diseases to people and domestic animals as cholera, dysentery, yellow fever...etc., (Cooper, 1996 and Roy, 1998).

To reduce damage of crows some studies were conducted to control them. From the general methods of controlling birds, the environments of crows can be changed and disturbed by

the imagination of combat, shooting, ultrasound, nest destruction and limitation of food supplies or nesting status. El-Bahrawy *et al.* (2007) found that klerat® (anticoagulant rodenticide) was the most effective then methomyl® and zinc phosphide® against crows.

This study aims to determine the species of crow and numerical movements during two years of study in the three habitats, the delta lands, reclaimed lands and cities at Al-Saff district, Giza Governorate. In addition, the appropriate taste of zinc phosphide baits to reduce their numbers and reduce their harm.

## **Materials and methods**

### **1. Tested habitats:**

#### **1.1. Old agriculture lands:**

These lands are in the west, near the Nile and villages. It is cultivated with crops, wheat, corn and clover. Also, some vegetables tomato, cucumber, eggplant and cabbage. Irrigate by immersion. Arbors spread over the land to protect cattle and sheep that feed on the remaining crops. Animal waste also piles up.

#### **1.2. Reclaimed lands:**

This land is desert and located in the east far villages. It reclaimed cultivation with fruit, mango, figs, date palm and some planted with crops of wheat, clover and vegetable such as tomato, green pepper and eggplant. These lands irrigated by sprinklers and droppers. Spread not far away from city dumps wastes.

#### **1.3. City:**

It is residential area crowded with residents and buildings located in center. Three habitats located in Al-Saff district, Giza Governorate.

### **2. Census crows:**

During 2018-2020 Crows counted in three tested habitats. For each habitat a plot (40\*500 M.) were determined with discretionary lines. Monthly for 4 consecutive days the

crows on the ground, perched and plane were counted before sunset for 15 minutes, according to Sarker *et al.* (2009) by binocular field 10\*50. Crows identified using Collins bird guide (Svensson *et al.*, 2010) and the number of crows species recorded for comparison.

### 3. Chemical control:

Zinc phosphide acute poison rodenticide (Zinc phosphide 94% active ingredient) obtained from Kafr-Zayate for pesticides, Egypt. Fish slices (3\*1 Cm.) were mixing with concentration of 0.5 and 1% Zinc Phosphide. A distance of 2 Km, one feddan was chosen for each treatment. First and second treatments applied with Zinc phosphide bait 0.5 and 1% directly. While in third treatment fish slices without poison applied for 3 days then poison bait 0.5% for one day. In the early morning, distribute the baits (100 gram) in the monitor place. Numbers of birds counted before and after treatment and the population reduction calculated.

### Results and discussion

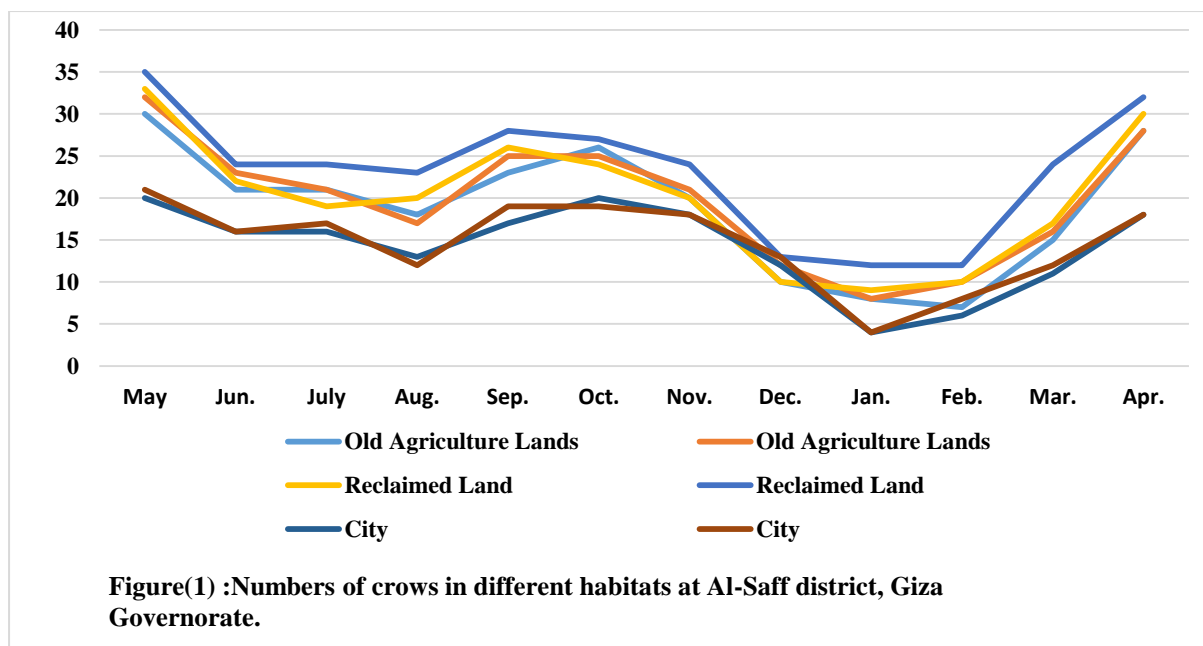
In three habitats, old agriculture land, reclaimed land and city through two years only species of crows was

found, hooded crow, *C. corane* in Al-Saff district, Giza Governorate. It is spread in Europe and Middle East in Egypt and Turkey (Hadoram and Lars, 2018). Attia (2013) found that from the resident birds in Egypt species recorded as harmful birds in Ismailia hooded crow, *C. corone cornix* and house crow, *C. splendens*, order Passeriformes. Ahmed *et al.* (2018) recorded hooded crow, *C. corone* in sheep farm at Ras-Seder, South Sinai. Data in Table (1) and Figure (1) showed that in old agriculture lands, reclaimed lands and city habitats the number were lowest in Jan. (8, 8), (9, 12) and (4, 4) birds to each habitat during two tested years respectively. In the same years the highest number were (30, 32) and (33, 35) birds in May to old and reclaimed lands. In city, the highest number of birds was 20 and 21 bird in Apr. The total number of birds for two years was 206 and 238, 240 and 283 and 159 and 173 birds and the number were 232.5, 255 and 166 birds to each habitat respectively. The average density of crows records 23.3 at old land 25.5 at reclaimed land and 16.6 per100m at city.

**Table (1): Numbers of crows in different habitats at Al-Saff district, Giza Governorate.**

Month	Old Agriculture Lands			Reclaimed Land			City		
	First	Second	A.	First	Second	A.	First	Second	A.
May	30	32	31	33	35	34	20	21	20.5
Jun.	21	23	22	22	24	22.5	16	16	16
July	21	21	21	19	24	21	16	17	16.5
Aug.	18	17	17.5	20	23	20.5	13	12	12.5
Sep.	23	25	24	26	28	26	17	19	18
Oct.	26	25	25.5	24	27	25.5	20	19	19.5
Nov.	20	21	20.5	20	24	22	18	18	18
Dec.	10	12	11	10	13	12.5	12	13	12.5
Jan.	8	8	8	9	12	10.5	4	4	4
Feb.	7	10	8.5	10	12	11	6	8	7
Mar.	15	16	15.5	17	24	19.5	11	12	11.5
Apr.	28	28	28	30	32	31	18	18	18
Total	206	238	232.5	240	283	255	159	173	166
Av.	17.16	19.8	19.4	20	22.5	21.25	13.25	14.4	13.8
L.S.D.	5.61								

A. Average

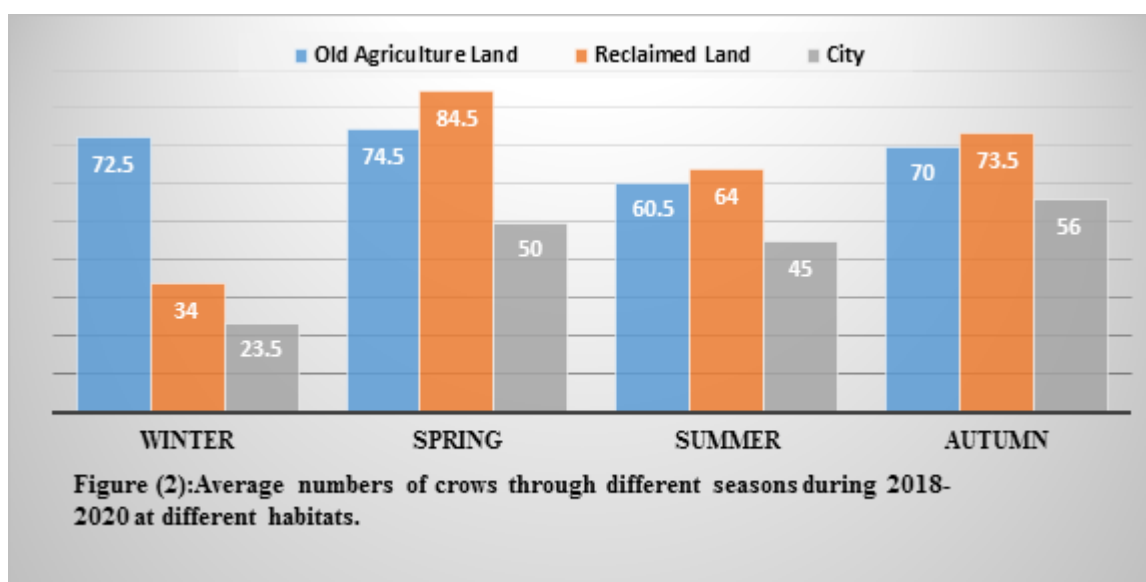


Data in Table (2) and Figure (2) clear that the maximum number of crow recorded during spring, 74.5 and 84.5 birds in old agriculture lands and reclaimed lands decrease to 70 and 73.5 ,60.5 and 64 ,72.5 and 34 birds in autumn, summer and winter at two habitats . While the maximum numbers recorded during autumn 56 in city, reduced to 50 birds in spring, 45 birds in summer and the minimum were 23.5 during winter. Analysis results clear that the numbers of crow increase from year to year and the rate of increase was

17.9, 15 and 6.9% at reclaimed lands, old lands and city, respectively. These results due to the availability of shelter and food suitable for crows in each habitat, particularly in reclaimed land which recorded the highest number of crows and the rate of increase compared with other habitats. Chong *et al.* (2012) reported that crows are rapidly adaptable in different environments, and the number of crows increased from 6000 up 10909 at the last 10 years in Ismailia Governorate.

**Table (2): Average numbers of crows through different seasons during 2018-2020 at different habitats.**

Seasons	Old agriculture land	Reclaimed land	City
Winter	72.5	34	23.5
Spring	74.5	84.5	50
Summer	60.5	64	45
Autumn	70	73.5	56
L.S.D.	24.59		

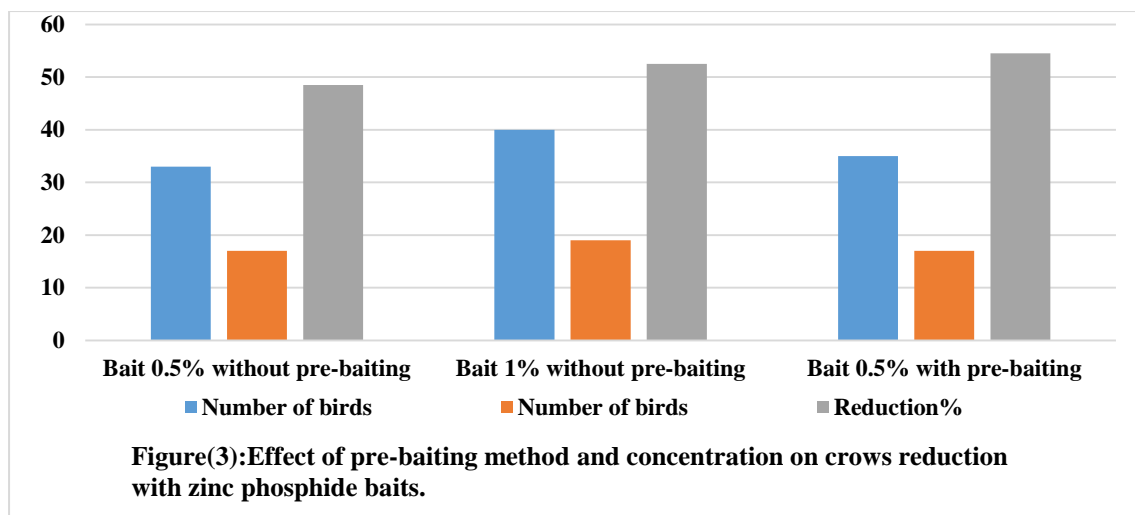


During spring months crows start mating and search of food after decrease activity during winter months so that the number were highly. The end of spring parent is busy with forming the nest and incubating the eggs and feeding their young's. With autumn, the crow number increase again due to the activity of adult birds and young's before entering the winter. In city, the houses may be not suitable for reproduction so that, crow search for another place to breeding and the numbers reduce compare with autumn. Khattab (2002) stated that abundance and distribution of hooded crow were highly during the breeding season and declined at the non-breeding season. In

addition, the numbers differ during year months. Bonnah (2007) reported that, the numbers of hooded crow increased annually during spring followed by autumn and decreased during summer and winter. Data in Table (3) and Figure (3) showed that the population reduction of crows was 48.5 and 52.5% to fish bait 0.5 and 1% without pre-baiting. The reduction reaches to 54.5 at fish bait 0.5% with pre-baiting. Looking, the results clear that the population reduction increased to 4% and with fish bait 1% compare with fish bait 0.5% without pre-baiting. But using pre-baiting method with fish bait 0.5% the reduction increased to 5.9%.

**Table (3): Effect of pre-baiting method and concentration on crows reduction with zinc phosphide baits.**

Treatment	Number of birds		Reduction%
	Before treatment	After treatment	
Bait 0.5% without pre-baiting	33	17	48.5
Bait 1% without pre-baiting	40	19	52.5
Bait 0.5% with pre-baiting	35	17	54.5



These results may be attributed to crow's reassurance and consuming Zinc phosphide bait using pre-baiting method. Ahmed *et al.* (2018) found that using methomyl, zinc phosphide 0.5 and super caid (Anticoagulant rodenticide) more effect on hooded crows, *C. corone* during April and the population reduction was 46.8, 53.1 and 73.3% to each chemical respectively.

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