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BIOLOGICAL STUDIES ON WILD BIRD CRESTED LARK *GALERIDA Cristata nigricans* IN SHARKIA GOVERNORATE

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ABSTRACT

The breeding season of the wild Crested lark, Galerida *cristata nigricans* inhabiting Sharkia Governorate began from April until August. The clutch size averaged 3.93 eggs/clutch and egg laying period averaged 4.55daus/nest, while the incubation period averaged 12.38 days/nest.

INTRODUCTION

The world holds about 8800 bird species, these species vary in abundance from extremely rare, consisting of a few individuals on the average of extinction to extremely wide spread numbering with many millions of individuals. Brooke and Birkhead, 1991, stated that the time at which birds have their eggs or young in the nest is termed the breeding season. The timing of breeding season is set by two types of factors. The first directly determine the success or otherwise of the breeding attempts made. Birds that lay and rear young in a seasonal environment at the time when a most available food are more successful and so leave more offspring (Murton and Westwood, 1977). Birds might form eggs from stored nutrients, from current food intake or from both (Ward and Bryant, 2006). The bird damage in different crops assumed was found in agriculture extension lands the Crested lark *Galerida cristata,* and Brown naked Raven *Corvus raficollis*, attacked the seeds during sowing stage. The highest percentage of damage by Crested lark and Brown nacked Raven occurred to maize (83.1 %) followed by wheat (53.6 %) and barely (45.12 %) the lowest was at watermelon (27.00%) and squash (19.01 %). Damage losses due to noxious birds attach varied from crop to crop and from year to year depending on the agroecosystem and weather condition (Wilson 1993).

Khattab (1993) surveyed birds at Sharkia governorate (Egypt) in old land and newly reclaimed land through the different seasons of the year. House sparrow, *Passer domesticus niloticus,* was the most prevalent species in both lands. In old land, Palm Dove *Streptopelia sengalensis sengalensis,* was ranked in second rank followed by hooded crow *Corvus corone cornix*, and Crested Lark, *Galerida cristata nigricans.* Soliman (1993) reported that the House Sparrow *Passer domesticus niloticus* ,was the predominant noxious bird species in the studied area at Kafr El-Sheikh Governorate, while Palm Dove *Streptopelia sengalensis sengalensis*, and Crested Lark *Galerida cristata nigricans,* ranked in the second order after House Sparrow. Larks or Family Alaudidae comprises 15 genera and 78 species and subspecies, In Egypt it is represented by 11 genera with 2 species and 22 subspecies (Tharwat 1997).

The aim of present work is studying some biological aspects on wild bird crested lark Galerida cristata nigricans in Sharkia Governorate.

MATERIALS AND METHODS

Study area:

Sharkia is one of the most important governorates of Egypt, which occubied the eastern site of Delta region. It covers about 1200000 feddans (about 5040 km^2); one million of them allocated for agriculture and other are arid, comprising 14 districts (khattab *et al.*, 2008).

Recognition characters of crested lark:

Crested lark *Galerida cristata nigricans* Brehm, (Family: Alaudidae, Order: Passeriformes) upper parts are sand colored with dark stripes lower parts are cream, with brown stripes on the breast and has a crest of dark fathers.

Biological experiments:

Some biological aspects of crested lark bird species were studied under field condition.

Nest building:

The strategy of nest site differs from one wild bird to another. Passerines may make more than one thousand trip to carry construction materials to their nests Collias and Collias (1984). During bird watching at, the nest sites were observed during the day light time to determine the initial time of nest building. This process was ended when the first egg was laid by the female bird. The first day of staring nest building and the day of laying the first egg at the same nest. The time which the bird needs to complete the nest building was calculated.

Egg laying, incubation and fledging period:

Clutch size is the number of eggs laid in a single nest. Number of crested lark nests was noticed to determine the period of egg laying under field condition. According to the method of Drent (1970), the egg laying period was determined as the time elapsed between the first egg laid and the last egg laid while the incubation period as the number of days elapsed between the last egg laid and the hatching of that egg .While the fledged period is the period when the young could fly and leaves the nest.

Actual and potential production:

The potential production (potential number of young) was calculated by multiplying the number of nest by the mean of the clutch size. But the actual production divided on potential production multiplying X 100 equal the percentage of actual / potential production. The actual production calculated by multiplying the number of successful nests by the mean of brood-size which gave the actual number of young. It based on information gained during routine visits and annual counts of broods (Newton and Krebs 1972).

RESULTS AND DISCUSSION

١. Some biological aspects of crested lark:
I. Nest building period
II. Clutch size
III. Incubation and fledging period

A nest is a special construction in which eggs and young develop. Crested lark is found in meadow, plains, beaches and other open area and lays their eggs in open nests on the ground.

The highest number of nests was recorded at May followed by June and the lowest one was in August of the breed season (table 1). The total investigated nests were 59 and the total days for nest building were 238 day with average 4.03 days per nest. The average of clutch size was 4.01 eggs per clutch. The egg laying period differed according the year month and the food supply. The total egg laying period for all nests was 269 days with average 4.55days. The incubation period average 12.38 day/ clutch. A nest considered successful of egg hatched according to (Sowls, 1955).

The larks are omnivorous eats mainly seed but eat also invertebrates such as beetles. The fledging period day was calculated, the days from the last egg hatched and the first young leave the nest, the fledging period average 11.35 days per young bird leave the nest. Fledging is a term usually applied to the acquisition by a young bird of its first feathers, when the process is complete the bird is fledged (Thomson, 1964).

Our results agree with Tharwat (1997) who mentioned that Crested larks lays 2-3 clutches of 3-5 eggs each incubated by female.

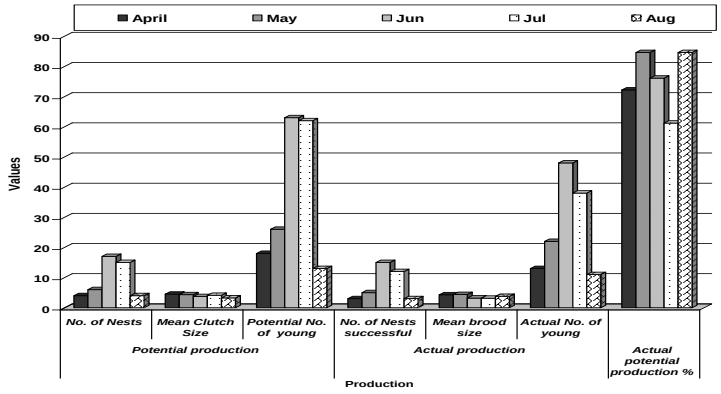
Table (1): Some biological aspects of wild bird Crested lark *Galerida cristat nigricans* at Sharkia Governorate.

Months	Nest building period			Egg laying period (days)			Incubation period (days)		Fledging period (days)	
	No. of nests	Total days	Average days/nest	No. of eggs	Total days	Average days/nest	Total	Average days/nest	Total	Average days/nest
April	11	34	3.09	41	47	4.27	136	12.36	125	11.36
May	18	75	4.16	68	78	4.33	218	12.11	210	11.66
Jun	12	55	4.58	51	57	4.75	151	12.58	133	11.08
Jul	10	43	4.3	43	48	4.8	125	12.5	112	11.2
Aug	8	31	3.07	34	39	4.25	101	12.62	90	11.25
Total	59	238	4.03	237	269	4.55	731	12.38	670	11.35

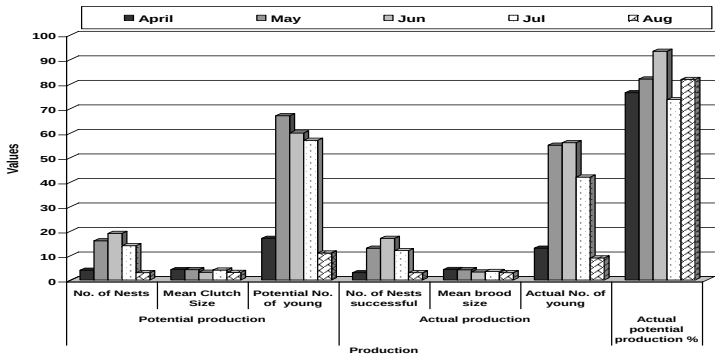
Actual reproductive potential of crested lark:

Data in table (2) and (Fig.1) illustrated that Crested Lark start breeding at April during the three years of field experiments with total investigated nests 136.The highly number during June and July were 17 and 15 nests during 2002 ,while the highly number during May and Jun were 16 and 19 ; 8 and 12 nests during 2003 and 2004 respectively.

2002



2003



2004

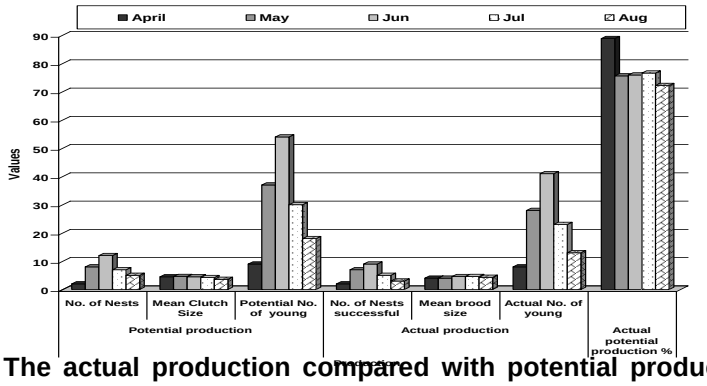


Fig. (1): The actual production compared with potential production of Crested lark *Galerida cristat nigricans* during 2002, 2003 and 2004.

The actual potential production percentages recorded highest values during 2003 breeding season during Jun 93.3 % while it recorded the second highest values during April 2004 with value 88.8 %, but the lowest one was recorded during July 2002 with value 61.2 %.

The total investigated nests of Crested lark under field condition during the three successive year was 136 nests, while the successful nest reached 112 nests with mean actual potential production 77.11 %, while the total young of this bird was 420 with mean brood size 3.8 young per pairs.

Table (2): Field trails on the actual production compared with potential roduction of Crested lark *Gallerida cristat nigricans .*

Year	Month	Potential production			Actual production			Actual potential production %
		No. of Nests	Mean Clutch Size	Potential No. of young	No. of Nests successful	Mean brood size	Actual No. of young	
2002	April	4	4.5	18	3	4.3	13	72.2
	May	6	4.33	26	5	4.4	22	84.6
	Jun	17	3.7	63	15	3.2	48	76.1
	Jul	15	4.13	62	12	3.16	38	61.2
	Aug	4	3.25	13	3	3.76	11	84.6
	Total	46	3.9	182	38	3.7	132	72.5
2003	April	4	4.25	17	3	4.3	13	76.4
	May	16	4.23	67	13	4.2	55	82
	Jun	19	3.19	60	17	3.3	56	93.3
	Jul	14	4.07	57	12	3.5	42	73.6
	Aug	3	3.09	11	3	3.00	9	81.8
	Total	56	3.76	212	48	3.66	175	82.5
2004	April	2	4.5	9	2	4.00	8	88.8
	May	8	4.6	37	7	4.00	28	75.6
	Jun	12	4.5	54	9	4.55	41	75.9
	Jul	7	4.2	30	5	4.6	23	76.6
	Aug	5	3.6	18	3	4.33	13	72.2
	Total	34	4.28	148	26	4.29	113	76.35
Total years		136	3.98	542	112	3.8	420	77.11

Data in table (2) indicated that, all wild bird species lay a characteristic number of eggs in a clutch. The average number varied from just one egg in many sea birds to as many as fifteen (and even occasionally higher) in some game birds. Clutch size is strikingly related to taxonomic group. Lack (1968) stated that the ability of parents to get food to their young was the limiting factors to lay eggs. The time at which birds have their eggs or youngs in the nest is termed the breeding season (Brooke and Birkhead, 1991). The breeding season of crested lark in this study started from April to August.

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دراسات احيائية علي الطائر البري القنبرة المتوجة في محافظة الشرقية

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أجريت هذه الدراسات في محافظة الشرقية علي مدي ثلاثة أعوام بهدف دراسة الطائر البري القنبرة المتوجة والذي يتواجد في محافظة الشرقية حيث يتغذى علي الحبوب والبذور واللافقاريات.

وقد تم تتبع دراسة القنبرة المتوجة من أول تواجدها في الأعشاش وحتى الطيران حيث يقوم عصفور القنبر ببناء العش وذلك بعمل حفرة صغيرة بالأرض ويبطن جوانبها بالأعشاب والألياف الجافة وتستغرق تلك الفترة ٤,٠٣ يوم لكل عش وفترة وضع البيض ٤,٥٥ يوم/ حضنه بينما فترة الحضانة ١٢,٣٨ يوم/ حضنه, وتغادر الصغار العش بعد ١١,٣٥ يوم.

كما تم دراسة الكفاءة الحيوية والقدرة البقائية له في موسم التكاثر وذلك علي مدي ثلاث سنوات حيث أمكن مراقبة ١٣٦ عش بداخلها ٥٤٢ بيضة بمتوسط ٣,٩٨ بيضة لكل حضنة في أماكن تواجدها المختلفة وتحت الظروف الحقلية ولقد تمكن الطائر بفضل قدرته الفائقة علي التكاثر من إتمام وبقاء ١١٢ عش نتج عنها ٤٢٠ فرخا صغيرا بلغت ٧٧,١١%.