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On the fundamentals of natural history and present threats to Red-wattled Lapwing in Kurukshetra environs

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Abstract: Red-wattled Lapwing *Vanellus indicus* is a very common bird seen on the periphery of Kurukshetra-Thanesar, twin towns, in agriculture fields. Last 28 years of keen observations reveal the fast coming up threats to its populations. The current populations are a quarter only of the level that existed in 1980s. Most visible threat has been caused by HUDA (Haryana Urban Development Authority). It has virtually converted the peripheral agriculture fields in Kurukshetra into so called HUDA-Sectors -new Human dwelling places with ultra modern civic amenities with vast open space with no protection or peace for lapwing populations- diminishing its populations to the present deplorable position. It has been observed to segregate into very strong male-female pairs during breeding season which embarks upon with respect to the first or second week of April, culminating in nest building and laying of eggs in the 4th week of April through May and 4th week of June. Juveniles were seen first in May last week. A total of 25 nests of the bird were surveyed in the breeding season during April to July 2010. The clutch size ranged from 3-4. Out of 25 nests surveyed, 13 nests were having 4 eggs each and 11 nests 3 eggs as in 2010. Also, only one nest was found with two eggs. Further, in all 87 eggs were laid in 25 nests, out of which 53 eggs hatched successfully. The eggs were mosaic colored with pied patterns- a measure of "Camouflaging" to evade attack of predators including Common Pariah Kite *Milvus migrans*, House Crow *Corvus splendens*, Greater Coucal *Centropus sinensis* and Stray dogs. Eggs on ground always confronted a threat from pedestrians.

Keywords: Dwindling Red-wattled Lapwing populations, Threats, Kurukshetra, Natural history

INTRODUCTION

Lapwing is a terrestrial bird of the agriculture fields preferring outskirts of villages and towns, often seen in pairs and in groups of 10-15-20 and never more. Its field characters are slim, sleek, long yellow legs, deep black color in neck and head, deep rough red wattle on either side of fore-front better seen from face to face, grey wings and slightly forked posterior of wings. There are about 7 species (Northern Lapwing *Vanellus vanellus*, Yellow-wattled Lapwing *Vanellus malabar*icus, Red-wattled Lapwing *Vanellus indicus*, White-tailed lapwing *Vanellus leucurus*, Grey-headed Lapwing *Vanellus cinereus*, River lapwing *Vanellus duvaucelii* and Sociable Lapwing *Vanellus gregarius*) of Lapwings as reported by Ali, (1996) and Grimmet *et al*, (1998). Gupta and Kumar (2009) and Gupta and Kaushik (2010) have reported at least 3-4 species from Kurukshetra, especially Red-wattled Lapwing, Yellow-wattled Lapwing, White-tailed Lapwing and River Lapwing. Kalsi and Khera (1990, 1992) studied the growth, development and maintenance behavior of Red-wattled Lapwing. Also, Khajuria (1972) studied the Nestlings of the Red-wattled Lapwing. Studies on varied aspects on avian ecology in recent past have been extensively carried out by Gupta and Bajaj (2000); Gupta and Kumar (2009); Gupta *et al.* (2009, 2010a-c); Gupta and Kaushik, (2010 a-b) and Gupta *et al.* (2010).

However, gathering information on the spectrum of threats, fundamentals of natural history in case of Red-wattled Lapwing are the first in Haryana and Punjab as detailed out in the present investigations, focusing attention on Kurukshetra environs. Last 25 years of observations on Red-wattled Lapwing populations indicated towards an alarming depletion of Lapwing populations, directly linked with habitat encroachment alteration and destruction etc. The present studies endeavor to focus attention on these issues dwelling mainly on fundamentals of natural history of Red-wattled Lapwing and the threats this bird is presently confronting.

MATERIALS AND METHODS

The present studies are a part of the studies on avian biodiversity in Kurukshetra University. These observations attempt to comprehend general observations spread over last 28 years (1982-2010). The study material is Red-wattled Lapwing. Its scientific name is *Vanellus indicus* (Boddaert, 1783) and it belongs to Order Charadriiformes and Family Charadriidae. Its size is a little short of Crow streamlined into a mosaic of Black, White, Yellow and mounted on sleek legs with a Red Wattle on either side of body and hence its name: Red

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Table 1. Spectrum of clutch size and hatchling success in case of Red-wattled Lapwing in and around Kurukshetra district in Haryana during April-July 2010.

S.No	Clutch size of nests	Hatchlings seen	Location of nests in the field	Date of egg laying	Date of hatching	Name of village
1	4	4	Open Field	22-04-2010	14-05-2010	Sadhipur
2	4	4	Elevated Footpath in the field	25-04-2010	16-05-2010	Sirsama
3	4	3	Elevated Footpath in the field	24-04-2010	25-05-2010	Sirsama
4	4	3	Open Field	27-04-2010	18-05-2010	Sadhipur
5	3	0	Open Field	28-04-2010	-	Sadhipur
6	4	3	Elevated Footpath in the field	26-04-2010	22-05-2010	Sirsama
7	3	2	Elevated Footpath in the field	23-04-2010	15-05-2010	Dheru-Majra
8	3	0	Elevated Footpath in the field	27-04-2010	-	Dheru-Majra
9	3	0	Open Field	28-04-2010	-	Kishan pura
10	2	2	Open Field	29-04-2010	22-05-2010	Kishan pura
11	3	2	Open Field	29-04-2010	22-05-2010	Kishan pura
12	3	2	Open Field	28-04-2010	24-05-2010	Beholi
13	4	3	Open Field	29-04-2010	23-05-2010	Beholi
14	4	0	Open Field	29-04-2010	-	Bir-Mathana
15	4	0	Open Field	30-04-2010	-	Bir-mathana
16	3	3	Open Field	30-04-2010	25-05-2010	Sirsama
17	3	2	Elevated Footpath in the field	03-05-2010	29-05-2010	Sirsama
18	3	2	Elevated Footpath in the field	05-05-2010	30-05-2010	Sirsama
19	3	2	Elevated Footpath in the field	07-05-2010	30-05-2010	Mathana
20	4	2	Open Field	10-05-2010	01-06-2010	Shadipur Ladwa
21	4	0	Elevated Footpath in the field	28-04-2010	-	Mathana
22	4	3	Elevated Footpath in the field	25-04-2010	21-05-2010	Umri
23	3	3	Open Field	27-04-2010	20-05-2010	Bir-Sonti
24	4	4	Open field	25-04-2010	19-05-2010	Umri
25	4	4	Open Field	25-04-2010	18-05-2010	Umri

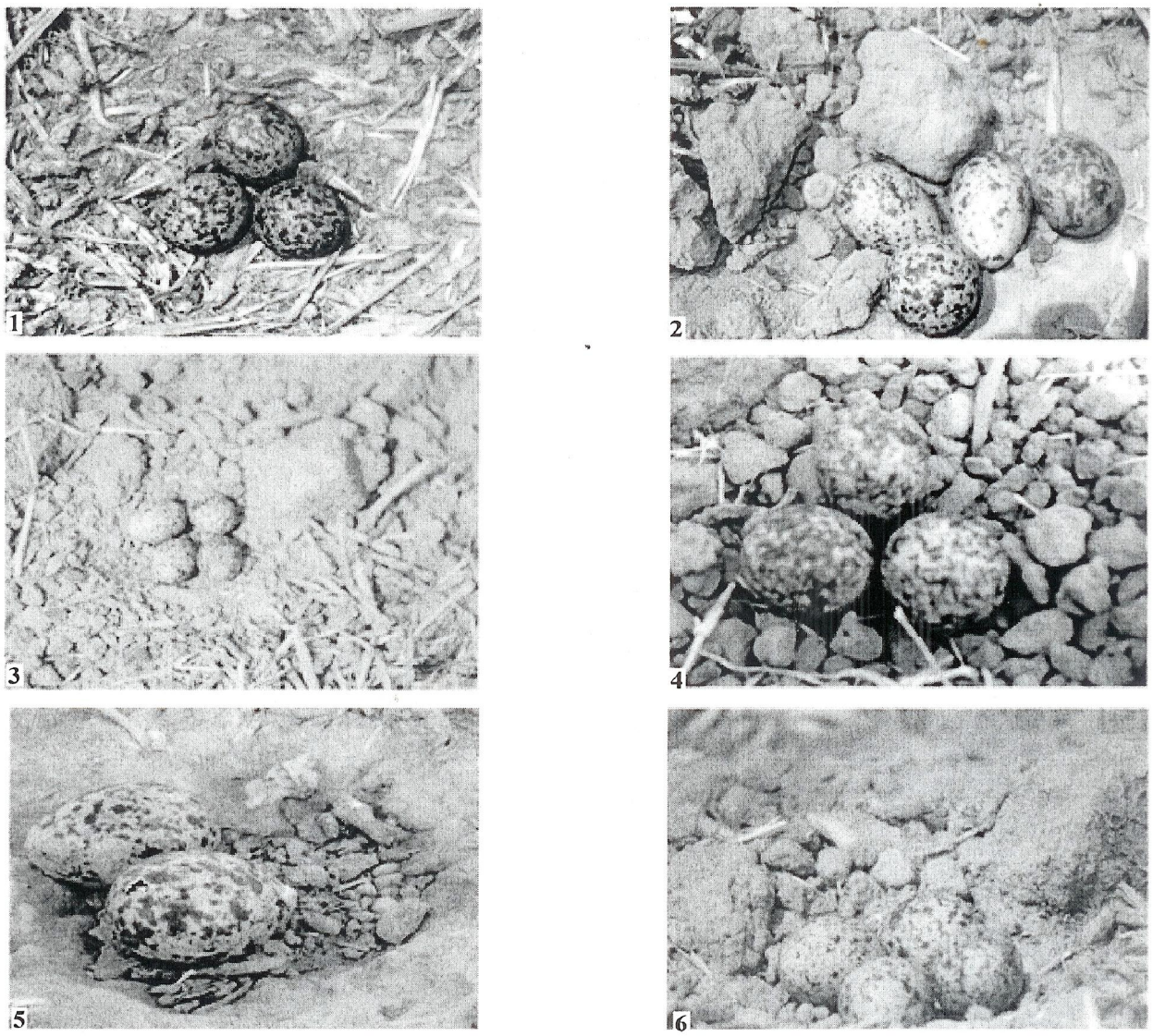
Wattled Lapwing. A periphery of 40-50 KMS around Kurukshetra is the study area. The geographical position of Kurukshetra district lies between Latitude 29°52' to 30°12' and Longitude 76°26' to 77°04'.

Field visits were made in the breeding season of April-July 2010 substantiated by last 28 years of observations. Visits were made at times during Morning, Forenoon, Noon, afternoon and evening time and as per convenience, within the constraints of time and other limitations. Observation of data has been done with the help of Zenith camera with 200 m tele-lens. Attention was focused on spotting pairs of Red-wattled Lapwing, their nests, activity patterns of female and males etc. The observations were compounded in Tables and Figs.

RESULTS AND DISCUSSION

In the present study, a total of 25 nests of Red-wattled Lapwing were surveyed in the breeding season during April to July 2010. It is evident from Table 1 that clutch size ranged from 3-4 (Figs. 1-6).Out of 25 nests surveyed, 13 nests with 4 egg and 11 nests with 3 eggs were sighted. Also, one nest was found with two eggs only in Kishanpura village in Kurukshetra district. Further, in all 87 eggs were followed in 25 nests of Red-wattled Lapwing, out of which 53 eggs (60.92%) hatched successfully (Table 2). It is pertinent to mention that 27.59% of eggs were destroyed by ploughing of fields by the farmers and 11.49% were damaged by predators like House Crow, Greater Coucal and Pariah Kite etc. The nests of lapwing were stuffed by earth pebbles and straws and sometimes small stones (Figs. 1-6). The total numbers of earth stones in case of open field were approximately 250-280. But when the nests were lodged on elevated footpath in between the successive fields, the total numbers of earth stone were approximately 150-180 per nest. It is pertinent to mention that in Kurukshetra, Red-wattled Lapwing uses soil balls instead of stony pebbles.

It is evident from Table 1, that in a periphery 5-10 KMs around Kurukshetra Town, survey hints towards the fact that Haryana Urban Development Authority has acquired huge agriculture land around villages like Sunderpur, Kalal Majra, Devi-Dasspura, Umri, Bir-Pipli, etc and created sectors 13, 7,6,5,4,3,2 and 30. On the top of this, Government of Haryana has roped in Private Realtors like Jindal Global Metropolis, Ansals, Sushant City who have now claimed agriculture land to create Global-Class Multi-Flats in a old traditional civilization that of Haryana in a mini-town like Kurukshetra. So much so modern shopping Malls like those available in Chandigarh (Sector-17) have been created in a small town like Kurukshetra (Sectors 17, 10).The first author has been keenly witnessing these threats throttling the Red-wattled Lapwing huge pulsating populations. This author has



Figs. 1-6. *Eggs of Red-wattled Lapwing Vanellus indicus in Kurukshetra district.*

also sadly seen the upcoming of HUDA Sectors in Kurukshetra as one of the greatest ever urbanization-step spelling disaster for Red-wattled Lapwings populations. The wheat fields, soon after April Harvesting were the rich hatcheries for Red-wattled Lapwing, virtually every Hundred Steps were having one more Lapwing nest on the ground-now everywhere concrete of roads and houses have destroyed the habitats. The threats to nests of Red-wattled Lapwing in harvested fields in April, May, June is totally inadvertent including trampling by human beings and ploughing of fields for sunflower crop. However, Jayakar and Spurway, (1968); Santharan, (1995); Fletcher *et al.* (2005) have reported direct or indirect threat from human. In view of that urbanization on the outskirts of villages and towns in India just like the one seen in Kurukshetra, is telling upon the populations of Red-wattled lapwing. It must be taken cognizance of, to prevent very fast extinction of Red-wattled Lapwing in near future, Sunflower sowing during April, May and June must be discouraged.

The succeeding account refers to the 2010, April-May, June-July period. At least 25 nests were actually observed in and around villages like Sirsama, Dheru-Majra, Bir-Mathana, Mathana, Shadipur-Ladwa, Bir-Shoanti, Umri, Kalal Majra, Beholi, Bajidpur and Kishan-Pura in Thanesar Tehsil in Kurukshetra. As the first nest was located in April and last in June; it hints towards the fact that egg laying in case of Red wattled Lapwing bird lasts for three months in acute summer. Nest are always improvised on the ground in the shape of very shallow depressions having always considerable number of soil balls to impart camouflaging to the vulnerable clutch of eggs which are heavily pied with mosaic of black and dull white (Figs. 1-6). It is interesting to reveal another "face" as well as measure of camouflaging in case of Red-wattled Lapwing as revealed by its highly mosaic-coloured one day old hatchings (Figs. 9-10). It is evident from the mosaic pattern of these hatchlings that mosaic pattern of eggs is genomically transmitted to the hatchlings-a continuous evolutionary effort being

Fig. 7. *Female Red-watted Lapwing incubating eggs in Sirsama village in Kurukshetra.*

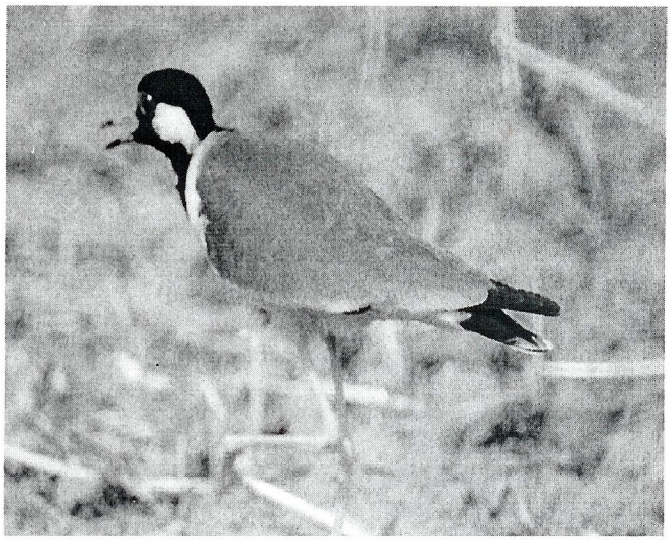


Fig. 8. *Female Red- watted Lapwing in a fit of despodency while withdrawing from its nest due to human threat at close distance.*

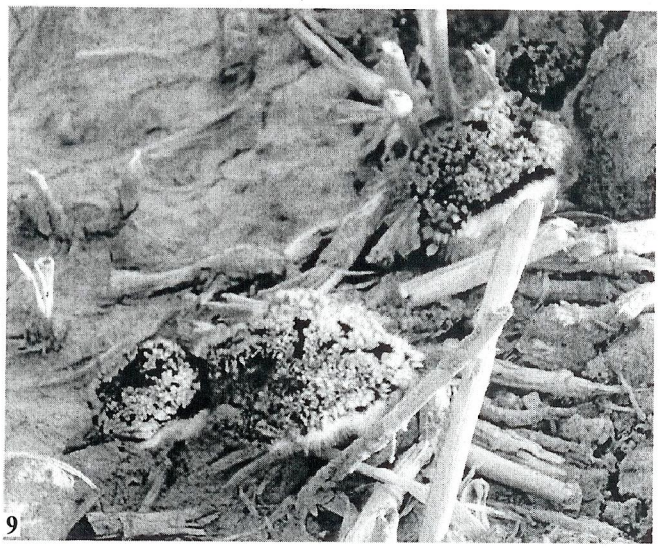
witnessed in case of Red-wattled Lapwing here in the present studies. It is also evident from table-I that despite the most vulnerable plight of Red-wattled Lapwing nests, hatching rate is 60-70%. Sethi *et al*, (2010) reported 27.58% hatching success in Yellow-wattled lapwing in Haridwar (Uttarakhand) as compared to 60.91% in Red-wattled Lapwing in Kurukshetra district in Haryana. It is amazing that camouflaging seems to work as an effective protection device by way of mosaic eggs and earth pebbles in the nest. In so far as incubation and attention towards eggs and hatchlings is concerned, the present studies reveal that incubation is only and only done by the female in the open under the scorching Sun of May to June when maximum temperature hovers around 40-45-48 0^C with blowing hot winds. The male bird stands closeby the incubating female. It foregoes all its normal activities. In contrast, Ali and Ripley, (1983) reported that both parents incubate the eggs. On any threat perception, both the birds become activity filled with utterance of high pitch voice and female sticking to the ground as far as possible. If the threat persists, both the birds take off the ground and become air borne to only few dashing flights but not buzzing off the scene of nest and eggs. The continuous voice production in an agitated manner is an effective device to ward off threat perceptions to the eggs. It was observed during the study period that House Crow, Great Coucal were the major predators in the study area. Kis *et al.* (2002) has also reported the impacts of predators to the nests of lapwings by Kites, House Crow, Great Coucal and Eagles. Nests of ground nested birds are also damaged by grazing animals (Beintema and Muskens, 1987; Hart *et al.,* 2002) and Human beings (Pfister *et al.*, 1992; Gill *et al.*, 2000; Flether *et al.*, 2005).

In Conclusion, it is opined that a majestic bird like Red-wattled Lapwing commonly seen on the outskirts of human inhabitations in rural, semi-rural environs is silently confronting with dire situations bordering on a serious threat leading to its ever low populations levels, even up to its total extinction in the next 20-40 years. Suitable measures like prevention of Sun-Flower Crops soon after April wheat harvesting operations so that Fallow Ground is available for its breeding cycle to take place.

Dwelling briefly on the natural history of Red-wattled Lapwing in Kurukshetra suburbs, this bird is the flagship avian species of vast agriculture fields, especially on their margins, roadsides, cow-dung yards, scrubby patch of abandoned lawns, grass plains etc. It is found in pairs and groups of 15-20. It may also be spotted near dwindling water pebbles along roadsides. It breeds in April-June. It is a ground breeder Nest is in the shape of small and shallow depression. Harvested wheat fields in and around villages are dotted with nest. Clutch size is 3-4. Success rate hatchling is 60-70 %. Contrary to this hatchling success to become adolescent is 25% or so i.e. one adolescent seen in July with one Female bird who laid 4 eggs in general Red-wattled Lapwing is facing threats from Modern Man in multiple ways. It has already

Table 2. Spectrum of hatching success and failure of eggs in case of Red-wattled Lapwing in Kurukshetra district in Haryana during April-July 2010.

S.No.	Total number of nests observed	Total number of eggs laid	Total number of eggs hatched	Hatching success (%)	Eggs damaged by ploughing of fields (%)	Eggs lost by predator (%)
1	25	87	53	60.92	27.59	11.49



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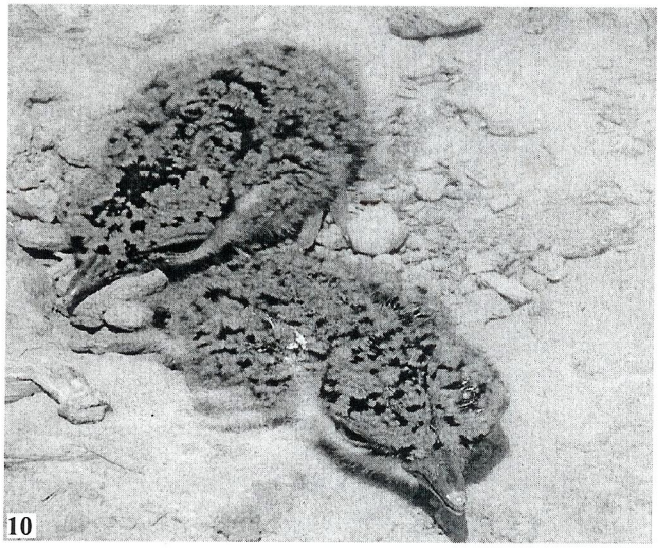

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Figs. 9-10. *Red wattled Lapwing chicks in Sirsama village in Kurukshetra district in Haryana (First Day size).*

been marginalized. It will meet its doom sly sooner than later.

Today, in want of appropriate nesting sites Red-wattled Lapwing are laying eggs on roof tops which are one howling sign of disturbed habitat conditions for Red-wattled Lapwing in Kurukshetra and elsewhere. It is very crucial to point out that open fields in rural areas in April to June, virtually appeared as the hatcheries of Red-wattled Lapwing in 1960s, 1970s and even in 1980s. In contrast, today their number stands drastically declined. It may become a rare bird by 2020.

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