

# Breeding Ecology and Behavior of Red-Wattled Lapwing (*Vanellus indicus*)

Manju Bala Sharma<sup>1</sup> and R. K. Sharma\*<sup>2</sup>

<sup>1</sup> Department of Zoology, KVA DAV College for Women, Karnal - 132 001, Haryana, India

<sup>2</sup> Department of Zoology, Kurukshetra University, Kurukshetra - 136119, Haryana, India

**Key words:** Breeding ecology, Red-Wattled lapwing, Nest building, Bio-control agent, Hatching success

Red-Wattled Lapwing is an important terrestrial bird species inhabiting agricultural landscape on surrounding outskirts of villages [1]. It belongs to order charadriiformes of family charadriidae. It is characterized by family sleek, slim, yellow long vadding legs, deep black collar in neck and head, white under parts and deep rough red wattle on either side of forefront of head [2]. Wings are grey and slightly forked at the posterior. These birds are seen often in groups in damp soil rich in invertebrates [3]. Red-Wattled lapwing and Yellow-Wattled lapwing, white tailed lapwing and river lapwing have been reported from Haryana [4]. Basic information on nestlings, growth and development has been recorded [5-7]. The changing agriculture practices including mechanization of most crop field activities and extensive input of insecticides and fertilizers have markedly decreased insect populations severely influencing the breeding ecology and behavior of red-wattled lapwing inhabiting fields of Punjab and Haryana [1]. The practice of straw burning after harvesting has resulted in serious threat for breeding of red wattled lapwing in post-harvested wheat fields. The present study was conducted on University Campus, Kurukshetra and cattle grazing fields and post-harvested wheat field on outskirts of Kurukshetra (latitude 29° 52' to 30° 12' and longitude 76° 26' to 77° 04').

The study was conducted on six breeding pairs of which two pairs inhabiting in Kurukshetra University campus, two pairs each from cattle grazing field and post-harvest wheat fields in outskirts of Kurukshetra city. Observations were recorded daily in the morning and the evening hours of the day using a camera.

Red-Wattled lapwings were spotted in pairs after 15<sup>th</sup> of March 2013-14. During courtship mate approaches towards female with its fanned tail stood erect keeping the neck in straight position, the male bird keeps on producing sounds with fully puffed breast. Female also responded to these signs by producing short quick repeating calls (Fig 1). Thereafter, pair displayed flights with dives. The mating took place at the ground (Fig 2). The breeding pair maintained a territory and

defends it from other birds and animals. Male selects the territory and gives the call note to the female. Nest building initiated in the first week of April, 2013-14 during morning and noon hours. Both the parents participate in the nest building. Nests are built on the ground which has slight depression surrounded by some soil balls imparting camouflage to the eggs. The clutch size was four. Eggs are soil brown with mosaic of black and some dull white patches on them and were plover type, being broad at one end and pointed towards the other (Fig 3). Hatching initiated in the first week of May and last for 2830 days. Hatching was synchronous. The hatchlings were covered with mosaic brown black down feathers (Fig 4). They had broad white cotter and whitish under parts. Newly hatched chicks were nudifugous. The young ones left nest soon after hatching. Their coloration was fully camouflaging the soil background (Fig 5-7).

Both the parents participated in feeding the chicks (Fig 8). On appearance of any danger/intruder, the breeding pair starts distracting the intruder and misguides it by moving in different directions whereas, the parents produce a specific warning note for chicks which squad and freeze on ground. Their food included small insects, mollusks, annelids, frogs, toads etc. The maximum loss of chicks occurred during the first week of their life. The predators like kites, crows, great coucal, shikara, peacock, mangroves, and stray dogs damage their eggs as well as hatchlings. Hatchlings success is around 80% whereas only 32% of the hatchlings survive up to adolescent (Table 1).

Breeding sites include open terrestrial habitats with sparsely vegetated ground in the vicinity of some water source. The damp substrate of the soil is rich source of variety of invertebrates which constitute main food source of the bird and the chicks [3]. The decrease in the population of the insectivorous/predatory birds has resulted in an increase in pest problems: insects and rodents [8-9]. The *Vanellus* species select the territory first in the selected area, a few partially constructed nest sites were seen before the final selection of the site for

Received: 21 Dec 2022; Revised accepted: 07 Mar 2023; Published online: 03 Apr 2023

**Correspondence to:** R. K. Sharma, Department of Zoology, Kurukshetra University, Kurukshetra - 136119, Haryana, India, Tel: +91 9485881959; E-mail: rksharmakukz@gmail.com

**Citation:** Sharma MB, Sharma RK. 2023. Breeding ecology and behavior of red-wattled lapwing (*Vanellus indicus*). *Res. Jr. Agril. Sci.* 14(2): 493-495.

nesting. The nest consisted of material accumulated from the nearby area. Red-Wattled lapwing nest were reported in harvest wheat fields, fallow lands, on roofs of the buildings and on bunds of paddy fields [10]. Both the sexes were actively involved in defending the breeding territories by territorial cause and aerial displays similar observations have already been reported by [11-12]. Clutch size of red wattled lapwing was four, however earlier workers have recorded two to four eggs in a clutch [1]. The egg coloration was dusty grey with stone-colored black brown patches completely camouflaging with the surroundings similar coloration has already documented [13-14]. The incubation period was observed 28-30 days, both male

and female participated in hatching: Belly soaking behavior was also recorded during incubation for maintenance of proper temperature [1], [14]. The newly hatched chicks were fed on insects, earthworms, spiders, millipedes, small frogs, toads etc. by both the parents [1-2]. Nest predation by peafowl, shikara, crows and stray dogs was observed. The present study strongly support the earlier findings of Desai and Malhotra [15], wherein they have documented low survival rate of chicks for first two weeks after hatching. On intrusion of any predator or human interference the frequency of alarm calls increased up to 70 calls per minutes [1].

Table 1 Breeding ecological parameters of red wattled lapwing recorded during 2013 and 2014

Nest habitat	No. of nests	Clutch size	Hatching period (in days)	No. of eggs hatched	Mortality in first 15 days	Breeding success (%)
Harvested wheat field	2	4	28-30	3	1	25
Cattle grazing wasteland	3	3-4	28-30	3-4	2	50
Fallow land	2	4	28-30	3-4	1	25
University Campus, Kurukshetra	2	4	28-30	3-4	1	25



Fig 1 Pair of lapwings exhibiting courtship



Fig 2 Mating pair of red wattled Lapwing

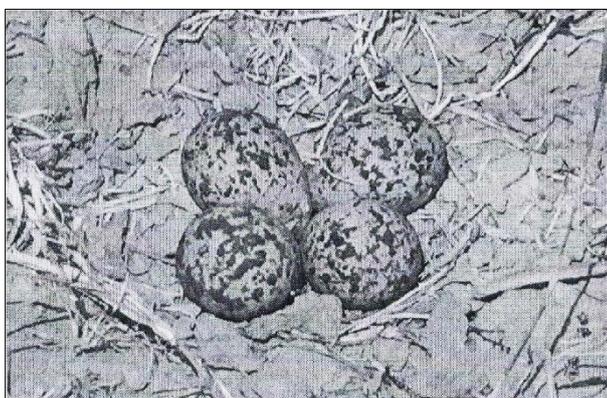


Fig 3 Nest with four eggs



Fig 4 Lapwing incubating the eggs



Fig 5 Freshly hatched hatchling in the nest



Fig 6 Chicks perfectly camouflaging



Fig 7 Free moving hatchlings

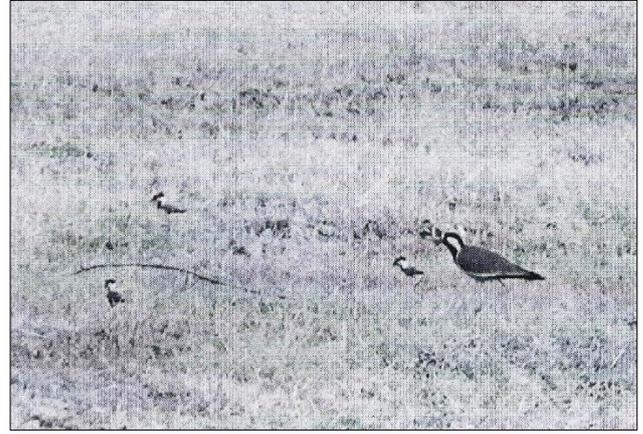


Fig 8 Parental care exhibited by red -wattled lapwing

## SUMMARY

During the present study breeding ecology involving selection of the territory, nest building, courtship, mating, egg laying, egg hatching and parental care have been studied in red-wattled lapwing during 2014 and 2015. Male selects the territory; both male and female participate in nest-building on ground by creating a circular depression in hard clay. The courtship behavior was observed from March to June. Three to four eggs were laid in the nests. Both the parents incubated the

eggs for 28-30 days and actively defended the territory. The hatchlings were nudifugous and revealed perfect camouflage. Parental care for four weeks was also noticed. Hatching success is approximately 80% and breeding success i.e., up to adolescence is 32%. Lapwing a natural bio-control agent of agricultural pests requires specific protection from farmers. It is recommended that burning of straw after harvesting should be avoided and the breeding sites of this important bird should be protected from any anthropogenic activity to increase breeding success of this important bird species.

## LITERATURE CITED

1. Kler TK, Kumar M. 2013. Nestling ecology and egg laying behavior of red wattled lapwing (*Vanellus indicus* Boddaert) in agricultural areas of Punjab. *Jr. Res. Punjab. Agri. Univ.* 50(3&4): 178-180.
2. Gupta RC, Kaushik TK. 2011. On the fundamentals of natural history and present threats to red-wattled lapwing in Kurukshetra environs. *Journal of Applied and Natural Sciences* 3(1): 6267.
3. Wilson JD, Evans AD, Grice PV. 2009. Bird conservation and Agriculture, Cambridge University Press. pp 187-193.
4. Gupta RC, Parashar M, Kaushik TK. 2010. Analysis of avifauna of Chilchilla Bird century in Haryana, India. *Jr. Adv. Zoology* 31(1): 35-44.
5. Kalsi RS, Khera S. 1990. Growth and development of red wattled lapwing *Vanellus indicus*. *Stilt* 17: 57-64.
6. Kalsi RS, Khera S. 1992. Some observation on maintenance and behavior of the Red wattled Lapwing *Vanellus indicus* (Boddaert). *Bombay Nat. Hist. Soc.* 89(3): 368-372.
7. Khajuria H. 1972. Nestlings of the red wattled Lapwing *Vanellus indicus* (Boddaert). *Pavo* 8(12): 82-83.
8. Parasharya BM, Dodi JF, Mathew KL, Yadav DN. 1994. Natural regulation of white grub (*Halotrichia* sp.: Scarabidae) by birds in agro-ecosystem. *Jr. Bio. Science* 19: 381-389.
9. Siriwardena GM. 2010. The importance of spatial and temporal scale for agri-environment scheme delivery. *Ibis* 152: 515-529.
10. Muralidhar A, Barve S. 2013. Peculiar choice of nesting of Red-wattled Lapwing *Vanellus indicus* in an urban area in Mumbai, Maharashtra. *Indian Birds* 8(1): 6-9.
11. Viyas R. 1997. Flocking and courtship display in red wattled lapwing (*Vanellus indicus*). *Journal of Bombay Nat. Hist. Society* 94: 406-407.
12. Kumar A, Sharma RK. 2011. Observations on breeding behavior and vocalizations in red-wattled lapwing, *Vanellus indicus* (Ayes: Charadriidae) from North India. *Jr. of Experimental Zool. India* 14(1): 333-338.
13. Gupta RC, Kaushik TK. 2010. On the causative factors responsible for the pathetic plight of yellow wattled Lapwing in Kurukshetra suburbs. *Jr. of Natural Conservation* 22(2): 181-187.
14. Saxena VL, Saxena AK. 2013. The study of nidification behaviour in red wattled lapwing, *Vanellus indicus*. *Asian Jr. Exp. Science* 27(2): 17-21.
15. Desai JH, Malhotra AK. 1977. A note on incubation period and reproductive success of red wattled lapwing, *Vanellus indicus* at Delhi Zoological Park. *Jr. Bombay Nat. Hist. Society* 73(2): 392-394.