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The Study of Nidification Behavior In Red Wattled Lapwings, *Vanellus indicus*

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Abstract : The present study focuses on the nidification and courtship behavior of Red Wattled Lapwings. During breeding season the male bird select the territory. Both male and female take part in building nest. The nest is generally a circular depression encircled by stones or pieces of hard clay. Four eggs are led in each nest. During the mid-March and June the birds exhibit courtship behavior. Male first gives signals of courtship. The female respond by emitting a mating call. The incubated is completed by both parents. Eggs hatch into nidifugous chicks in 28-30 days. Both parents protect territory and protect their own plumage completely (3-5 weeks) tills become good fliers.

Key Words- Nidification, Courtship, Clutch size, Nidifugous

Introduction

The description about Indian birds has been well documented by Whistler (1948) and Salim Ali and Ripley (1980). Birds possess note worthy tendency to build a home to raise their young ones (Holway,1965 & Collias,1997). The incubation and broody behavior in Pheasant (*Phasianus colchicus*) been studied (Breihenback *et al*., 1965). Rhythm of incubation from egg laying to hatching in mountain white-crowned sparrow has been reported by Zebra and Morton (1980). The nest and detailed nidification activities of the spoonbill, *Platalea leucorodia* has been described by Dayanadi and Hosetti (2008 & 2009). They stated that casting of nest is an important part of bird's biology as it plays a key role in shaping the relationships between parents with their offspring. The procedure of site selection for nidification in Savannah sparrow and procedure of nest has been critically described by Wheelwright *et al*.(1997). The parental building roles of male and female under different environmental has been studied in Western Gull and several species of birds (Plerotti and Ridley.,1981; Bryant &Tatner,1990;Conrad & Robertson,1993;Collias,1997; Brawn *et al*., 2011). The activities and pattern of behavior are successful courtship, acquiring of a nesting area, building a safe and protected nest (Clark and Shulter,1999) laying of the clutch, taking care of the hatchlings, feeding and protecting them (Krebs, 1987) till they become good fliers. This behavioral pattern finds its origin in the direction towards self and racial survival. Nidification behavior is also very important for maintaining the ecological and genetically balances. Saxena *et al*.(2008) stated that breeding and nidification in *Colonbia livia* and *Stretopelia chinensis* undergoes throughout the year, although pigeon breeds preferably during January to May while Dove breeds during January to August. Recently, Vaithianathan problems faced by the species due to changes in environment as a result of pollution. The use of territory has been traced by early as 1941 by Nice

Material and Method

The study was conducted on 6 pairs of birds in Kanpur city, including one nest located at the rooftop of D.G.College, Kanpur. The period of study was during the months of March 2010 to June 2010, which is the time of spring followed by hot summers till the onset of monsoons.

The observations were taken with from full precautions without disturbing birds. For the concealment of human activities without the knowledge of birds. A 6 feet height frame was constructed which was covered by a cloth with two openings small enough to observe the nidification, courtship behavior etc needed for the study. This 'hide' was left near the nest for 2-3 days to acclimatize

Fig.1 : Hide used for observation

the birds (Figure 1).

The observations were taken on daily basis by naked eye starting in early hours of dawn and ending with dusk. The photographs were taken through a Nikon camera.

The eggs that were laid by the birds were measured for size with the help of a thread and a scale and average were calculated. The permission from ethical committee of the college has been obtained for the study of these endangered birds.

Observations

Courtship Behavior

The birds were spotted moving in pairs between 18-22 March, 2010 in Kanpur and its suburbs. The male initiated the courtship at all the station. Male reaches first towards the female with its fanned tail and then stood erect keep the neck in stretched position. The breast of the male was fully puffed out and to sought attention of the female, the male bird showing tumbling flights and produce songs. Female responded to these antics of the male by giving short, quickly repeated calls. Pair formation included display flights with tail fanned; shallow rapid wing beats and gives a number of calls.

Number of mates

The male and female were observed to jointly take up the responsibility of rearing the young.

Territory

The breeding pair maintained a territory in the surrounding of their nest. It is treated as a special area and intrusion in this area by strangers is protected by parents.

Male first acquires a territory and then gives a call note to the female. The male greets the arrival of the female joyfully by wheeling in the air and squawking happily. These birds give alarming calls protesting intrusion; they sing a territory song to get it distinguished and noticed to avoid strangers.

Nest construction and nesting material

Nest building started on 2nd April 2010. Nest was built during early morning up to noon and then in late afternoon on successive days. Nest building is a joint effort of both the parents with almost equal contribution.

Clutch Size

The clutch size in Lapwing was observed to be of four eggs. The eggs were laid on alternate day starting from 8 April 2010 till 14 April 2010. Eggs were laid during afternoon hours. The eggs were so arranged by the bird that their small ends meet in the center, making for even sitting and easier incubation by the parent. The bird was observed to rearrange the disarranged eggs.

Eggs

The eggs were of plover type, broad at one end and much pointed towards the other. They were pyriform with color varying from a pale olive green to a reddish buff.

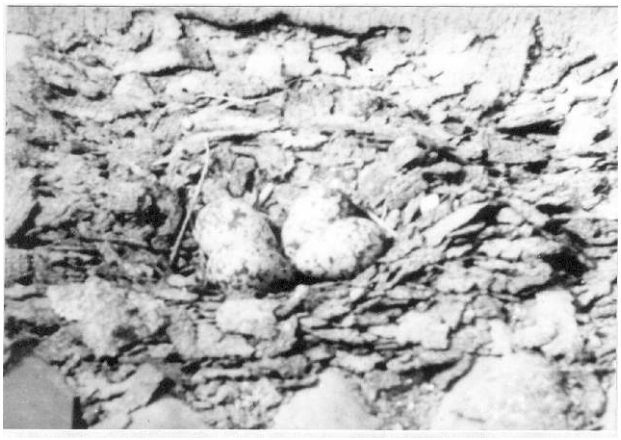

Fig.2. Eggs of lapwing

There were deep brownish black markings or spots, which are distributed all over the surface of the eggs. The egg size varied from 1.2 inches-1.6 inches on an average. (Figure 2)

Incubation

Lapwings incubated the eggs by sitting on them. Incubation started with the laying of the first egg. Both the sexes shared the duty of sitting on the eggs. Mostly female did the duty but male assisted her a lot. Incubation took 3 weeks and 4 days. The season of summer made the birds wet their breast feathers regularly to keep the eggs wet. (Figure 3, 4)

Fig.3. Incubation of eggs

Fig.4. Incubation of eggs

Hatching pattern

Young hatched out one after the other starting on 4 May 2010, at an interval of 46-48 hours, in the order in which they were laid. Hatching was synchronous. (Figure 5)

Fig.5. Hatching pattern of lapwing

Physical features of hatchlings

The hatchlings were covered with brown coloured down feathers. They had upper parts grayish brown, mottled black. They had a broad white collar, a black pectoral band, the chin and rest of the under parts were white tinged whereas the belly and the flanks were buff colored. The newly born chickens were nidifugous. The parents cared for these precocial young. The young left the nest as soon as they were dry and were able to move about with great ease. Their brown color helped them to blend in the surroundings. They were able to fly within three-five weeks. (Figure 6, 7)

Fig.6. Physical feature of lapwing hatching

Fig.7. Physical feature of lapwing hatching

Brood care and feeding

The brooding mother kept freshly hatched young warm at night. During the day the male and both the female protected them from the hot sun taking turns. Day brooding stops after 5 days of first hatching. Night brooding stopped only after the chicks were partly fledged which took about 16 days.

On the appearance of any danger or an intruder the brooding pair slowly creeped away to some distance and began calling to lure the enemy away from the nest.

If birds of prey flew overhead the brooding bird crouched silently on the eggs or the young to conceal them.

(Figure-8)

Fig.8. Brood care

Behavior of the nestlings

The nestlings were nidifugous and precocial. They start running about as soon as they emerged out of egg shell. They were born feathered and could feed themselves. They needed their parents only for their protection till they could learn to defend themselves.

The nestlings spread over an area to feed, ran a few steps, stopped, pecked and then stood up straight. The chicks fed themselves easily but were safely protected by

the parents. They ran for cover in some plant or debris whenever their parents uttered a warning note or an alarm call.

Nest sanitation

Lapwings kept the nest clean and tidy. The eggshells after hatching were removed from the nest providing both sanitation and concealment.

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Discussion

According to IUCN (2009), Red Wattled Lapwings new zoological name is *Vanellus indicus* instead of *Lobivanellus indicus* .The species has been spread over in a large range. It maintains a well guarded and a well-distinguished territory which is in the interest for the welfare of their young ones. Territories selection has been started to select the site for the construction of nest. The site selection has been studied in birds (Clark and Shulter,1999). Saxena *et al.(*2008) reported that in pigeons and dove the territory is selected and claimed by mutual consent from both the parent only after pair formation. They further stated that individual breeding pairs maintain a territory surrounding the nest. In pigeon the male defends its territory by holding its wings aloft, landing on its rival at times or by clubbing the rivals head with bent wings. In dove male as well as female both defend the territory by chasing the intruders out of defined space. The present study is in confirmation to above referred authors that the breeding pair maintained a territory in the surrounding of their nest. It is special area protected by parents in this area strangers are not permitted by the parents. These birds give alarming calls protesting intrusion; they sing a territory song to get it distinguished and noticed to avoid strangers. Male first acquires a territory and then gives a call note to the female. The male greets the arrival of the female joyfully by wheeling in the air and squawking happily.

These birds show courtship behavior by giving mating call. The mating call is in the form songs, show flights and mock displays by the male (Singh, 2004). Similar behavior has been reported in American Avocets (Sordhl, 2001). Monogamy assures better care for the young, these birds practice monogamy to assist in parental care (Ali and Ripley, 1980). Parental care has also been observed in Western Gulls (Collias, 1997; Plerott and Ridly, 1981). Lapwings maintain a well guarded and a well-distinguished territory to aid the welfare of their young ones The present study supports the observation of earlier author for the nest site selection as proposed by Clark and Shulter., 1999). Territory also aids in concealment and protection of young ones (Holway, 1991) . Lapwings build their nest in open while selection of site places or even at the roof of the building keeping the concealing coloration for protection of eggs. They scoop a shallow hallow in the ground and line it with pebbles. Vicinity of water is preferred. The male scrapes the ground for the nest and the female lines it with local materials when she finds it satisfactory. Lapwings construct their nests early in the mornings and late in the afternoon during April, similar to nest building of passerine birds. (Collias, 1997).

Nest and Nidification Activities of the Spoonbill *Platalea leucorodia* in Westerghat Region of Shimoga, Karnataka is also being studied and The nesting activity, nest site selection, nesting habitat, nesting material, nest size, and nidification of *Platalea leucorodia* are discussed (Dayananda and Hosetti, 2009). Such studies on nidification is done on different birds including Indian grey horn bill,black headed ibis pig (Charde *et al.*, 2011), pegion and dove (Saxena *et al*., 2008), Spot-billed Pelican (Vaithianathan and Jeganathan, 2012), tropical birds (Jeffrey *et al.*, 2011) etc. are done in recent years. Lapwings kept the nest clean and tidy. The eggshells after hatching were removed from the nest (Smith, 1993). The hatchlings start running a few steps, then stopped, pecked and then stood up straight as soon as they emerged out of egg shell. It is critically noticed that new born bears feathered and could feed themselves. They need their parents only for their protection till they could learn to defend themselves.

Clutch size of Lapwings is four in the present study, however, some workers have also reported three to five eggs (Conrad and Robertson,1993). The present investigation the incubated is 25 days in natural conditions without using hormone treatment (Smith, 1993) and both the sexes share in the incubation simultaneously. Studies of incubation behavior have been done as early as 1965 on Pheasants (Breitenbach *et al*., 1965). The young hatchlings of Lapwings are grayish brown with white on the underside. Sibling competition and behavior of siblings in Swiftlets and Bee-eaters has been observed (Bryant and Tatner.1990) while behavior of adults and young of Acadian Flycatcher has also been reported in detailed(Whitehead and Taylo, 2001; Wesolowski, T. 1994). The eggs are often collected by people and used in traditional remedies for asthma and typhoid. (Negi,*et .al* .2007).

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