

BREEDING ECOLOGY OF *Streptopeliachinensis* (SPOTTED-DOVE) AND *Pycnonotuscafer* (RED-VENTED BULBUL) IN MOHNYIN DEGREE COLLEGE AND ITS ENVIRONS

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Abstract:

Nests, eggs, clutch size, incubation and reproductive success of *Pycnonotuscafer* (Red-vented Bulbul) and *Streptopeliachinensis* (Spotted-dove) were observed from March to July 2015 at Mohnyin Degree College and its environs, Mohnyin Township, Kachin State. Among the total of six nests, three nests of Spotted-dove and other three nests of Red-vented Bulbul were observed during the breeding season. In Red-vented Bulbul nests, seven eggs were observed and six eggs of Spotted-dove were found during the study period. Among the Red-vented Bulbul nests, 28.57% were recorded as successful, 28.57% were abandoned and 42.86% are lost of unknown reason and in the nests of Spotted-dove, 66.67% were recorded as successful, 33.33% were lost of unknown reason were recorded in the study sites. Out of all recorded thirteen eggs, six eggs hatched and survived.

Keywords —Bird species, Clutch size, Incubation, Reproductive success.

I. INTRODUCTION

Nest site selection is primary importance for the reproductive success of a breeding pair. The selection of a nest site is influenced by physical and biological factors (Rounds, cited by New NweKhaing, 2008).

Having selected a nest site, the breeding bird must built a nest, lay a clutch of eggs and incubate them. The number of young hatched will depend on the size of clutch. Incubation of birds must divide their time between the eggs and the need to spend some time feeding, the balance depending on the fat reserves which can be lost over the incubation period (Patterson, 1982).

At the end of the period of incubation fertile eggs with live embryo hatch, or give birth the young; unhatched eggs may be infertile embryos that died at some a stage of development (Wallace, 1963).

The Spotted-dove (*Streptopeliachinensis*) is a small and somewhat long-tailed pigeon which is common resident breeding bird across its native range on the India subcontinent and Southeast Asia. The Spotted-dove is the native of Asia found across a range of habitats including woodland, scrub and farmland habitation. Spotted-dove move around in pairs or small groups as they forage on the ground for grass seed, grains, fallen fruits and seeds of other plants. In Hawaii, they breed all year round. In Southern Australia, they breed mostly from September to January in the north of Autumn (Wikipedia, the free encyclopedia).

The Red-vented Bulbul *Pycnonotuscafer* inhabits shrub lands, natural and planted forests, cultivated areas, and parks and gardens in urban area. Although this non-migratory bird occurs naturally as a resident breeder in tropical areas of Southern Asia from Pakistan, India and Sri Lanka to

Southern China (ISSG Database 2005, IUCN Red list 2007 cited by Podoces, 2008).

Red-vented Bulbul builds its cup-shaped nest in a bush and lays two to five eggs in a clutch. It feeds on fruits, flower nectar, seeds, buds, all insects and occasionally small lizards (Podoces, 2008).

Many different kinds of birds were found in Mohnyin Township. It also supports a large variety of different flora and fauna. Spotted-dove and Red-vented Bulbul are widely distributed throughout the year in Mohnyin Degree College and its environs.

In Mohnyin Township, information on the ecology of birds is very limited and the records of breeding of birds are also very scarce.

The breeding ecology of Spotted-dove and Red-vented Bulbul have been interested to study. Hence the present study has been undertaken at the Mohnyin Township where these species are observed to be present throughout the year with the following objectives;

- to investigate the breeding ecology of Spotted-dove and Red-vented Bulbul and
- to determine the reproductive success.

II. MATERIALS AND METHODS

A. Study Area and Study Period

This study was carried out at Mohnyin Degree College and its environment. Mohnyin Township is located between 24° 46' N and 96° 22'E, 685 feet above the sea level. There is Nanyin stream across the town and continue to agriculture fields. Mohnyin Degree College is located near the Indawgyi Wetland. It is located between 24° 55' and 25° 20' N and 96° 5' and 96° 40'E. The study period lasted from March to July, 2015, Figure.1.

B. Identification of species

For identification of the species, birds were captured and identify the species. Identification was conducted followed after Smythies (1940-1986) and Blaford (1898).

C. Nest site and Nest Characteristics

Nest search was conducted during breeding seasons (from March to July 2015) at Mohnyin

Degree College and its environs. Nest search was made by seven persons.

Nest site characters were recorded including dominant plant species. Data were collected including nest diameter and nest depth, nest materials and nest characteristics. The nests and eggs were observed throughout the study period and taking photographs with a digital camera for records.

D. Eggs and Clutch Size Characteristics

The eggs were recorded from start to end of incubation that is conducted by both parents. Eggs color and shape were noted. The egg size could not be measured because handling the eggs might have effected their incubation during breeding season. If the hatching date and clutch size are known, the laying date can be estimated by back-dated system (Patterson, 1982).

In the study period, after the laying was completed, eggs of each clutch or clutch size were counted by direct method and recorded by digital camera during the breeding season.

E. Hatching Characters

After hatching, coloration and morphological characters of young were recorded before fledging period.

F. Reproductive Success

A nest was recorded as successful, if one or more eggs were observed to be hatched. For the nest that failed, they were recorded as either predated or abandoned or lost for unknown reasons. If egg shells and remains of hatching were observed they were considered as predated, and if nests with cold eggs for several days it was assumed that abandoned.

Breeding success is calculated by following method

Breeding success percentage = (nest with hatching successfully)/(all nests found) × 100

III. RESULTS AND DISCUSSION

Systematic position and General Account of Study Species

Phylum	- Chordata
Class	- Aves
Order	- Columbiformes
Family	- Columbidae
Genus	- <i>Streptopelia</i>
Species	- <i>Streptopeliachinensis</i>
(Scopoli, 1884)	
Common Name	- The Myanmar Spotted-dove
Local Name	- Gyo-le-byauk (Figure 2)

Kingdom	- Animalia
Phylum	- Chordata
Class	- Aves
Order	- Passeriformes
Family	- Pycnonotidae
Genus	- <i>Pycnonotus</i>
Species	- <i>Pycnonotuscafer</i> (Linnaeus)
Common Name	- Red-vented Bulbul
Local Name	- But-pin-ni (Figure 3)

A. Nest Sites

The three nests of Spotted-dove were found in the branch of Khayay trees (*Manilkanahexandra*) within Mohnyin Degree College from March to June, 2015.

The nest was mainly built by twigs, dried stems of climbers, grasses and roots. First nest with two white eggs was observed in front of the main building of Mohnyin Degree College on the date of 10th March, 2015 and second nest, 25th March. Third nest with two white eggs was observed near the main gate of Mohnyin Degree College, June 29, 2015.

The three nest of Red-vented Bulbul were observed in the branch of Longan tree (*Dimocarpus longan*) at the down town of MohnyinMyo from March to July. Nest materials are small branches of stem, roots of herbs and grasses. Among the Red-vented Bulbul nests, first nest with two eggs were observed at the branch of Longan (*Dimocarpuslongan*) in the Arlawikone quarter in 5th March, 2015. These eggs were not hatch,

because it were not incubate for several days by both parents so they were recorded as abandoned. Second nest with three eggs were found in the same tree of first nest in March 25. These were lost for unknown reason. Third nest with two eggs were observed the branch of Longan at the Nakha (north) quarter of Mohnyin Township in June 29, 2015. These eggs were hatch successfully.

B. Nest Characteristics

Spotted-dove nest are flimsy cup, mean nest diameter and nest depth were 15.17cm and 3.03cm respectively (Table 1A). Red-vented Bulbul nests are definite cup shaped. Mean nest diameter (10.00cm) and mean nest depth (4.27cm) were calculated (Table 1B.)

C. Egg and Clutch Size Characteristics

Eggs of Spotted-dove and Red-vented Bulbul were recorded during breeding season. Spotted-dove's eggs are white (Figure.4A) and Red-vented Bulbul's eggs are pinkish white, more or less profusely blotched with purplish brown (Figure.5A).

In the study period, only two eggs were found in all three clutches of Spotted-dove. One clutch with three eggs and two clutches with two eggs were found in Red-vented Bulbul nests. Mean clutch sizes of Spotted-dove and Red-vented Bulbul were calculated (Table 3A & B).

D. Incubation

During breeding season, both parents of Spotted-dove and Red-vented Bulbul remained together throughout the incubation period. In Spotted-dove, incubation period were observed to be 15 to 16 days and 10 to 12 days in Red-vented Bulbul.

E. Hatchling Characteristics

During the hatching period hatching out of eggs from each clutch were recorded with digital camera.

In the Spotted-dove, nestlings or hatchlings were observed with sparsely down feathers with closed eyes after hatching. So hatchlings of Spotted-dove were recorded as semi-altricial type during the study period. Young Spotted-doves are similar to

adults, but have a mostly dark grey collar instead of black and white(Figure.4B,C,D,E).

After the hatching, parents of Red-vented Bulbul were observed constantly collecting food for the newly hatched ones (nestlings). Young nestlings used to sleep most of the time. The nestlings were completely naked with closed eyes. So the nestlings are altricial type. The nestlings do not have feathers for first few days(Figure.5B,C,D).



Fig.2 *Streptopeliachinensis*
(Spotted-dove)



Fig.3 *Pycnonoyuscafer*
(Red-vented Bulbul)

F. Hatching success

A total of six nests and thirteen eggs were found during breeding season. Among these nests, three nests of Spotted-dove and other three nests of Red-vented Bulbul were observed. In the nest of Spotted-dove (66.67%) survived giving rise to 4 hatchlings from two nests but one nest (33.33%) was fail with lost of unknown reason (Table 4A).

Among the Red-vented Bulbul nests, one nests (28.57%) survived giving rise to 2 hatchlings during the study period (Table 4B).

A frequency of nest, number of eggs and the percentage of total eggs of Spotted-dove and Red-vented Bulbul were calculated (Table 2A & B).



A. Two white eggs



B. Two days old hatchlings



C. 4th or 5th days old hatchlings



D. Ten days old hatchlings



E. 14 Or 15 days old hatchlings

Figure.4. Recorded Eggs and Hatchlings of *Streptopeliachinensis* (Spotted-dove)

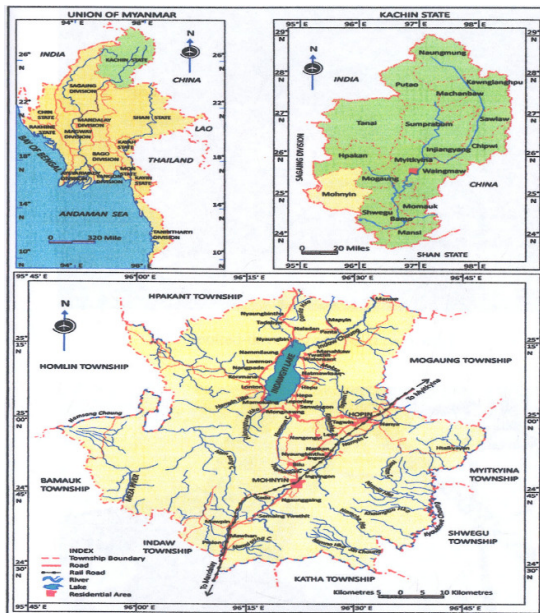


Fig.1 Location Map of MOHNYIN Township

Source: UTM Maps, Department of Geography, University of Mandalay



A. Two eggs of Red-vented Bulbul



B. Two days old hatchlings



C. Five days old hatchlings



D. Ten days old hatchlings

TABLE I.A
MEASUREMENT OF THE NEST OF SPOTTED-DOVE AT MOHNYIN DEGREE COLLEGE

Nest Number	Nest diameter (cm)	Nest depth (cm)
1	15.5	3.3
2	15.2	2.8
3	14.8	3.0
Mean	15.17 cm	3.03 cm

TABLE II.B
MEASUREMENT OF THE NEST OF RED-VENTED BULBUL AT MOHNYINMYO

Nest Number	Nest diameter (cm)	Nest depth (cm)
1	9.5	4.0
2	10.00	4.3
3	10.5	4.5
Mean	10.0	4.27

TABLE II.A
FREQUENCY OF NEST, NUMBER OF EGGS AND PERCENTAGE OF TOTAL EGGS OF SPOTTED-DOVE DURING BREEDING SEASON AT MOHNYIN DEGREE COLLEGE

Number of eggs	Frequency nest	Total eggs	%
2	1	2	33.33
2	1	2	33.33
2	1	2	33.33
Total	3	6	99.99

TABLE II.B
FREQUENCY OF NEST, NUMBER OF EGGS AND PERCENTAGE OF TOTAL EGGS OF RED-VENTED BULBUL DURING BREEDING SEASON AT MOHNYINMYO

Number of eggs	Frequency nest	Total eggs	%
2	1	2	28.57
2	1	2	28.57
3	1	3	42.86
Total	3	6	100.00

TABLE III.A
MEAN CLUTCH SIZE OF SPOTTED-DOVE AT MOHNYIN DEGREE COLLEGE

Mean Clutch Size	2.0
Range	2-2
Number of eggs	6

TABLE III.B
MEAN CLUTCH SIZE OF RED-VENTED BULBUL FROM MOHNYINMYO

Mean Clutch Size	2.33
Range	2-3
Number of eggs	7

TABLE IV.A
NEST SUCCESS AND LOSS OF SPOTTED-DOVE AT MOHNYIN DEGREE COLLEGE

Nest numbers	Nest out come	Nest%
1,2	Successful	66.67
3	Abandoned	33.33
Total 3		100.09

TABLE IV.B
NEST SUCCESS AND LOSS OF RED-VENTED BULBUL FROM MOHNYINMYO

Nest numbers	Nest out come	Nest%
1	Successful	28.57
2	Abandoned	28.57
3	Lost (unknown reason)	42.86
Total 3		100.00

IV. DISCUSSION

In Myanmar, *Streptopeliachinensis* (Spotted-dove) is one of the commonest of birds. Its habit of

walking about on roads and village paths in search of grain it is one of the most familiar. The breeding season extends throughout the year. In Myitkyina it appears to start breeding as soon as the rains in July and August (Smythies 1953).

At the study site, nests of Spotted-dove were observed from March to June, 2015. Nests were constructed on the bending branches of Khayay tree (*Manilkanahexandra*) during breeding season.

The distribution of *Psycnonotuscafer* (Red-vented Bulbul) is India to East Myanmar and west Yunnan. Its breeding season starts from February-May, with second broods up to August (Smythies, 1953).

During the study period, nests of Red-vented Bulbul were observed from March to July. Nests were conducted on the branches of Longan tree (*Dimocarpuslongon*).

The three nests of Spotted-dove were observed in the branches of Khayay (*Manilkanahexandra*) in Mohnyin Degree College from March to June during study period. The nest is a shallow, flimsy platform of sticks, twigs, dried stems of climbers, grasses and roots. Each nest was found only two white eggs. Both sexes share the incubation of the eggs and incubation period were conducted to be 15 to 16 days during study period.

Nestlings of Spotted-dove are semi-altricial, covered at first with wispy down and brooded and fed by both parents, initially with a secretion called 'crop milk'. Once the feathers begin to develop, the chicks are brooded less, and are fed regurgitated seed. More than one brood can be raised in a season (Frost, 2013).

During the study period, nestlings or hatchlings of Spotted-dove were observed with sparsely down feathers so nestlings were recorded as semi-altricial. It was observed that young Spotted-doves are similar to adults but have a mostly dark grey collar instead of black and white. Young lack the prominent neck patch; their wing coverts and scapulars have pale brown edges; and the iris is brown-yellow.

The nests of *P. cafer* (Red-vented Bulbul) are easily distinguished, having a definite cup shape. It prefers the material for built up the nest like a small branches of stems and roots of herbs and grasses. The colors of eggs are pinkish white, more or less profusely blotched with purplish brown. The clutch size is the numbers of eggs laid in an uninterrupted series. The upper limit of the clutch size is three in *P. cafer* and sometimes two also. The variation of the clutch size is correlated with the availability of food; the larger clutch is laid when the food for the young is most abundant. According to Lack's hypothesis that the clutch is hereditary characteristics of each species (Lack 1954 cited by Prajapati, 2011).

During the study period, three nests of Red-vented Bulbul were observed in the branch of Longan tree (*Dimocarpuslongan*) at down town of MohnyinMyo. The eggs of Red-vented Bulbul are pinkish white with patches purplish brown.

During the breeding season, it was observed that both parents of Red-vented Bulbul remained together throughout the incubation period. Incubation period were observed to be 12 days. The nestlings were completely naked with closed eye so the nestlings were observed as altricial type.

Three nests of Spotted-dove and other three nests of Red-vented Bulbul were observed during study period. Among the nests of Spotted-dove, (66.67%) survived giving rise to 4 hatchlings and (28.57%) survived giving rise to 2 hatchlings in the Red-vented Bulbul in Mohnyin Degree College and its environs.

V. CONCLUSIONS

This study has provided characters, breeding ecology of some birds and were other birds poorly known at Mohnyin Degree College and its environs which could be easily assessed for ecological study. The data included in this work are discussed based within five months and there is still needed to bird watching people. In this study site some species of bird were migrated due to environmental disturbances. Thus this study area should be conserved carefully.

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