

Breeding of *Lonchura punctulata* (Scaly-breasted Munia) from Sagaing University of Education Campus

Nwe Nwe Khaing

Department of Biology, Sagaing University of Education , Sagaing Division, Myanmar

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Abstract- Nests, eggs, clutch size, incubation and reproductive success of *Lonchura punctulata* (Scaly-breasted Munia) were observed from August 2017 to July 2018 at Sagaing University of Education Campus. Among the total of 57 nests, 41 nests (71.93%) were recorded as successful, 16 nests (28.07%) were observed as failure during the breeding season. Thirty five nests were found in *Mimusops elengi*, Ten nests were recorded in *Saugainvillea spectabilis* (Sekku - pan) Shrub, eight nests were observed in *Cycas sp* (monding). Small tree, Two nests were conducted in *Pterocarpus macrocarpus* (Paduk tree) Rose wood and Two nests were also recorded in *Casuarina equisetifolia* (Pinle kabwe). Among the total of 57 nests, 202 eggs and 105 hatchlings were observed during the breeding season.

Index Terms- Eggs, Juveniles, Hatchlings, Reproductive Success

I. INTRODUCTION

Birds are conspicuous found everywhere. They indicate seasonal symbol. Many ecologists feel that birds are one of the most visible indicators of the total productivity of such biotic system. Life history studies identified many important biological attributes by species (Bent, 1963 cited by Welty, 1982).

The Scaly-breasted Munia or spotted munia (*Lonchura punctulata*) is endemic to Asia and occurs from India and Sri Lanka, east to Indonesia and the Phillippines. The bird is listed as of Least Concern by the International Union for Conservation of Nature (IUCN). Scaly-breasted Munia usually clutch 4 to 6 eggs, but can contain up to 10. Both sexes build the nest and incubate the eggs, which hatch in 10 to 16 days. Juveniles typically to fledge in three weeks. Both sexes may reach sexual maturity as early as 7 months after birth in the captivity (from Wikipedia, the free encyclopedia).

Many different kinds of birds were found in Sagaing University of Education and its environs. It also supports a large variety of different flora and fauna. Scaly-breasted Munias are widely distributed throughout the year in Sagaing University of Education and its environs.

In Sagaing University of Education and its environs, information on the ecology of birds is very limited and the records of breeding of birds are also very scarce. The breeding of scaly-breasted Munia has been interested to study. Hence the present study has been undertaken at the Sagaing University of Education campus where these species are observed to be present throughout the year with the following objectives;

- to investigate the breeding of Scaly-breasted Munia and
- to determine the reproductive success.

II. MATERIALS AND METHOD

Study Area

Sagaing University of Education campus was chosen as the study area. The study area is the semi-forest type. The topography of the campus is slightly higher than the rural area and there is a lake at the left site of the Main building. Sagaing University of campus is organized with human settlements (University's staff houses), lecture buildings, small forest type with large trees and open place with bushes (Fig.1).

Study Period: The present study has been conducted from August 2017 to July 2018. It observes the nests of Scaly-breasted Munia searching and counted in the early mornings and early evenings. Direct count method was used during the study period.

Eggs and Clutch Size Characteristics

The eggs were recorded from the start to the end of incubation that was conducted by both parents. The color and shape of eggs 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.

Hatching Characters

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

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 as abandoned.

Breeding success is calculated by the following method

$$\text{Breeding success percentage} = (\text{nest with hatching successfully}) / (\text{all nests found}) \times 100$$

III. OBSERVATIONS AND RESULTS

Systematic Position of Study Species

Phylum - Chordata
Class - Aves
Order - Passeriformes
Family - Estrildidae
Genus - Lonchura
Species - *L. punctulata* (Linnaeus, 1758)
Common Name - Scaly-breasted Munia
Local Name - Sa-Wadi (Fig.B).

Nest Building and Nest Characteristics

Nest building by both sexes begin in August 2017. These were 35 nests constructed with dried leaves and grasses in the branches of (Khayay small tree). Ten nests were recorded in the branches of *Saugainvillea spectabilis* (Sekku-pan shrub). Eight nests were constructed with dried leaves, greases and roots in the (*Cycas* sp. (Mondaing) Small tree). Among the 57 nests, two nests were found in the branches of *Pterocarpus macrocarpus* (Paduk tree). And two nests were also observed in the branches of *Casuarina equisetifolia* (Pinle kabwe). The average trees height were measured (Table 4).

Egg and Clutch Size Characteristics

A total of 57 nests with eggs were recorded from August 2017 to July 2018 during the study period. The eggs are pure-white when fresh, but soon became cream to buff color. During the egg laying period, 202 eggs were found. Number of nests, eggs and percentage of total eggs were recorded (Table1) during the year from August 2017 to July 2018. In the study period, clutch size ranged from 1 to 7 eggs and mean clutch size were calculated (Table 2).

Incubation and Nesting Effort

During the breeding season, both male and female were also observed to remain together and incubate their eggs throughout the incubation period. Incubation period was observed to be 12 to 14 days. A total of 57 nests were observed during the study period. Among these, 41 nests (71.93%) survived till the hatching and 16 nests failed, (10.53%) were lost to predator, 6 nests (10.53%) were abandoned and 4 nests (7.02%) lost for unknown reason (Fig A, Table 3).

Hatchling

After hatching, the hatchlings were completely naked with closed eye so the hatchlings were observed as its altricial type (Fig.D). Juveniles seemed innocent and ignorant. They were bright cream in colour contrasting sharply with the dark conical beaks. The breast of these juveniles were obviously lacking in the scale patterns (Fig.E).



Fig. 1. Sagaing University of Education Campus

Table 1. Frequency of nest, number of eggs and percentage of total eggs of Scaly-breasted Munia during breeding season at Sagaing University of Education Campus

Number of eggs	Frequency nest	Total eggs	%
7	5	35	17.33
5	14	70	34.65
4	13	52	25.74
2	20	40	19.80
1	5	5	2.48
Total	57	202	100.00

Table 2. Mean clutch size of scaly-breasted Munia at Sagaing University of Education Campus

Mean Clutch Size	0.09
Range	1-7
Number of eggs	202

Table 3. Nest success and loss of scaly-breasted Munia at Sagaing University of Education Campus.

Nest numbers	Nest outcome	Nest
41	Successful	71.93%
6	Abandoned	10.53%
4	Lost (unknown reason)	7.02%
6	Predator	10.53%
Total = 57		100.00%

Table 4. Average height of trees in study site

No.	Trees, small tree and shrub	Average trees height feet
1	<i>Mimuscops elengi</i> (Khayay small tree)	7.5
2	<i>Saugainvillea spectabilis</i> (Sekku-pan shrub)	6.2
3	<i>Cycas sp</i> (Mondaing small tree)	3.5
4	<i>Pterocarpus macrocarpus</i> (Paduk tree)	18.5
5	<i>Casuarina equisetifolia</i> (Pinle kabwe)	15.5

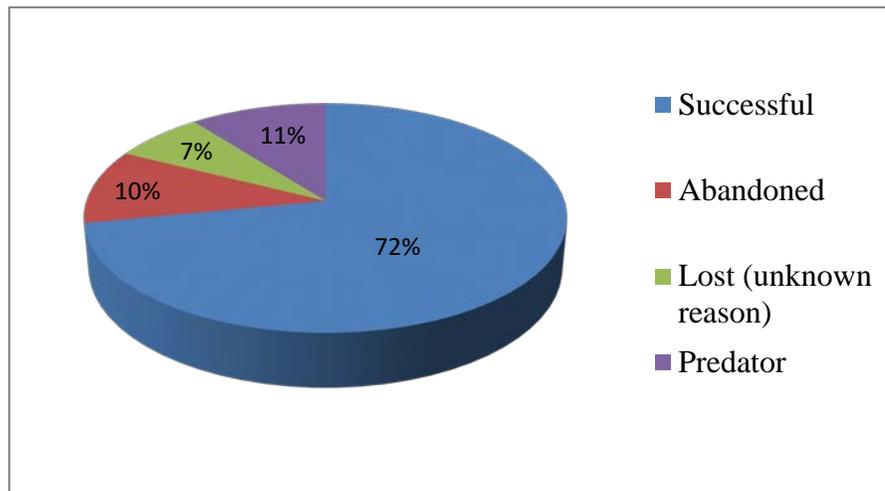


Fig.A. Nest success and loss of scaly-breasted Munia at Sagaing University of Education Campus.



Fig. B.Scaly-breasted Munia (Adult)



Fig.C. Nest with hatchlings



Fig.D. Hatchlings



Fig.E. Juvenile of Scaly-breasted Munia

IV. DISCUSSION

Scaly-breasted Munias form flocks of as many as 100 birds. Individuals communicate with calls that include a short whistle and a sharp chipping alarm note. (from Wikipedia, the free encyclopedia).

In the Sagaing University of Education and its environs, scaly-breasted Munia were found as flocks of as many as 30 birds before the breeding season. During the breeding season, pairing form of male and female were observed.

The breeding season is chiefly during the rains, but eggs are laid as late as December. Nests are made of bamboo leaves, straw, twigs, etc; when pampas grass is used, the white silky top is on the outside. The eggs usually 4-6 but once "at least 10" in number are white. The fledgling period is 18 days (Smythies, 1999).

During the breeding season, the nest opening is located to face downwind of the wind direction at the study site. Clutch sizes were observed 1 to 7 eggs. Both sexes share the incubation of the eggs and incubation period was conducted to be 12 to 14 days. Hatching period was recorded to be 18 to 21 days at the study site.

In the present study, the hatchlings were observed completely naked with closed eyes so the hatchlings were recorded as altricial type. Juveniles are a plain brown or buff below and lack of scale on the belly.

Fifty seven nests of scaly-breasted Munia were observed during the study period. Among the nests of scaly-breasted Munia, 41 nests (71.93%) survived giving rise to 104 hatchlings in the Sagaing University of Education campus.

Reproductive success may be influenced by other factors than food supply. These factors include predation, weather, flooding, pollution and disturbance (ICES, 2001 cited by Nwe Nwe Khaing, 2008).

V. CONCLUSION

This study has provided some information on the nest building, eggs, clutch size and hatching success of Scaly-breasted Munia. However, life history and ecology of birds were poorly Known at Sagaing University of Education Campus in which could be easily assessed for ecological study. Thus, from the result of present study it is suggested that there is still a need to have more specific information on Scaly-breasted Munia.

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AUTHOR

First Author – Nwe Nwe Khaing, Associate Professor, Department of Biology, Sagaing University of Education , Sagaing Division, Myanmar
email: drnwekhaing@gmail.com.