

**POPULATION STATUS, HABITAT USE AND BREEDING SUCCESS
OF ASIAN OPENBILL (*Anastomus oscitans*) IN LAMI TAL AND
TIKAULI TAL, CHITWAN**



A Dissertation

**Submitted for the Partial Fulfillment of the Requirements for the
Master's Degree of Science in
Zoology (Ecology)**

By

Srijana Sapkota

Exam Roll No. 1314

Batch no. 2062\2063

T. U. Red No. 5-2-19-866-2002



To

**Central Department of Zoology
Institute of Science and Technology
Tribhuvan University, Kirtipur
Kathmandu, Nepal
March, 2010**

RECOMMENDATION

This is to certify that **Ms. Srijana Sapkota** has carried out the dissertation entitled **“POPULATION STATUS, HABITAT USE AND BREEDING SUCCESS OF ASIAN OPENBILL (*Anastomus oscitans*) IN LAMI TAL AND TIKAULI TAL, CHITWAN”** as a partial fulfillment of the M.Sc. Degree in Zoology under my supervision and guidance. To the best of my knowledge, this dissertation has not been submitted for any other degree in any institution. I recommend that the dissertation be accepted for the partial fulfillment of the requirements for the **Master's Degree of Science in Zoology** specializing in **Ecology**.

Tej Bahadur Thapa
Associate professor
Central Department of Zoology
Tribhuvan University
Kirtipur, Kathmandu
Nepal

Date:.....

LETTER OF APPROVAL

On the recommendation of supervisor **Mr. Tej Bahadur Thapa** this dissertation submitted by **Ms. Srijana Sapkota** entitled “**POPULATION STATUS, HABITAT USE AND BREEDING SUCCESS OF ASIAN OPENBILL (*Anastomus oscitans*) IN LAMI TAL AND TIKAULI TAL, CHITWAN**” is approved for examination and submitted to the Tribhuvan University in partial fulfillment of the requirements for the Master’s degree of Science in Zoology with Ecology as a special paper.

Prof. Dr. Ananda Shova Tamrakar
Head
Central Department of Zoology
Tribhuvan University
Kirtipur, Kathmandu,
Nepal

CERTIFICATE OF APPROVAL

This dissertation submitted by **Ms. Srijana Sapkota** entitled **“POPULATION STATUS, HABITAT USE AND BREEDING SUCCESS OF ASIAN OPENBILL (*Anastomus oscitans*) IN LAMI TAL AND TIKAULI TAL, CHITWAN”** has been accepted as a partial fulfillment of **Master's Degree in Zoology** Specializing in **Ecology**

EVALUATION COMMITTEE

Asso. Prof. Tej Bahadur Thapa
Supervisor
Central Department of Zoology
Tribhuvan University
Kirtipur, Kathmandu

Prof. Dr Ananda Shova Tamrakar
Head
Central Department of Zoology
Tribhuvan University
Kirtipur, Kathmandu

External Examiner

Internal Examiner

Date of Examination:.....

DECLARATION

This study entitled “**POPULATION STATUS, HABITAT USE AND BREEDING SUCCESS OF ASIAN OPENBILL (*Anastomus oscitans*) IN LAMI TAL AND TIKAULI TAL, CHITWAN**” is original of its kind and has not been submitted anywhere. The findings and statements stated in this dissertation are based on my own field works.

Date:

Srijana Sapkota

Exam Roll No.1314

T.U. Regd. No. 5-2-19-866-2002

Date:.....

ACKNOWLEDGEMENT

First and foremost, I would like to express my sincere gratitude and deep respect to my supervisor **Tej Bahadur Thapa, Assoc. Prof.** Central Department of Zoology, Tribhuvan University. This work is all due to his knowledge of the subject, his guidance and continuous inspirations.

I am grateful to **Prof. Dr. Ananda Shova Tamrakar**, Head of Central Department of Zoology, Tribhuvan University for providing me necessary equipment and encouragement. I am equally grateful to **Prof. Dr. Tej Kumar Shrestha** and **Prof. Dr. Vasanta Kumar Thapa**, former Heads of the Department for their valuable suggestions. I express my thanks and best regards to my respected teachers and staff of Central Department of Zoology, T.U. Kirtipur.

I am also thankful to **Mr. Janak Raj Khatiwada, Mr. Ganga Ram Regmi, Mr. Bikas Regmi**, and **Mr. Hem Subedi** who assisted me a lot through various activities during the study.

I am also thankful to my colleagues **Anita Godar, Sirjana Adhikari, Sudipa Ghimire, Anil Prasai** and **Sanjan Thapa** for their help during my research.

I am very much grateful to my parents for their inspiration and continuous support during my study.

I am also deeply grateful to **DNPWC** and **CNP** for giving me research permission inside the National Park and also to my husband **Purushottam Sharma** for his constant support during this thesis work.

Srijana Sapkota

Central Department of Zoology

T.U. Redg. No. 5-2-19-866-2002

Exam Roll No:-1314

Batch:-2062/2063

ABSTRACT

The Asian Openbill (*Anastomus oscitans*) is the vulnerable species of birds. Its population has been declining in the Chitwan. Present study was carried out to determine the population size, habitat use and breeding activities in Lami Tal and Tikauli Tal, Chitwan. Road transect surveys methods were used to collect data of Asian Openbill and Jackknife technique was used to calculate the estimated population size. The conservation threats were analyzed by field surveys and questionnaire surveys.

The maximum estimated population size of Asian Openbill was 118 in Tikauli Tal area and 151 in Lami Tal area. Asian Openbill was found to use the wetlands for nesting, foraging and feeding purpose. The total nest recorded during the study was all in the wetland area. The feeding grounds surveyed were all the wetlands as rice fields as rice fields, marshy areas etc. Saj (*Terminalia tomentosa*), Simal (*Bombax ceiba*) and Palas (*Butea monoserma*) were extensively used by Asian Openbills for nesting purpose.

Using active nests as primary unit, the breeding success of Asian Openbill was 87.5% in Lami Tal area and Tikauli Tal area. Two types of results were found from the different sites. No any significant in flock size of Asian Openbill was found between nesting and post-nesting phase ($t_{cal}=2.24 < t_{tab}=2.31$) in Lami Tal while there was significant difference in flock size of Asian Openbill between nesting and post-nesting phase ($t_{cal}=2.71 > t_{tab}=2.31$) in Tikauli Tal.

Remarkable decline in the no. of Asian Openbill may be due to the habitat destruction, lack of food, natural calamities, unfavourable condition and use of chemical fertilizers. Raising of awareness among the local people, plantation of nesting trees in wetland area and providing information about the ecological role of Asian Openbills in controlling the paddy pests.

CONTENTS

DECLARATION	.....	i
RECOMMENDATION	.....	ii
LETTER OF APPROVAL	.....	iii
CERTIFICATE OF APPROVAL	.....	iv
ACKNOWLEDGEMENT	.....	v
CONTENTS	.....	[vi-viii]
LIST OF TABLES	.....	ix
LIST OF FIGURES	.....	x
ABBREVIATIONS AND ACRONYMS	.....	xi
ABSTRACT	.....	xii
CHAPTER 1: INTRODUCTION	.....	[1-7]
1.1 Background	.....	1
1.2 Biology of Openbills	.....	3
1.3 Ecology of Asian Openbill	.....	3
1.3.1 External Morphology	.....	3
1.3.2 Distribution	.....	4
1.3.3 Habitat	.....	5
1.3.4 Food	.....	5
1.3.5 Behavior	.....	5
1.3.6 Voice and Calls	.....	5
1.3.7 Breeding	.....	6
1.4 Objectives	.....	6
1.5 Justification	.....	7
1.6 Research Hypothesis	.....	7
1.7 Importance of the Study	.....	7
1.8 Limitation of the Study	.....	7
CHAPTER 2: LITERATURE REVIEW	.....	[8-12]

CHAPTER 3: RESEARCH METHODS	[13-23]
3.1 Study Area	13
3.1.1. Location and Topography	13
3.1.2 Geology and Soil	14
3.1.3 Climate	14
3.1.4 Biodiversity	16
3.1.5 Features	18
3.1.6 Indigenous Ethnic Group	19
3.2 Materials and Methods	19
3.2.1 Preliminary Survey	19
3.2.2 Bird Survey	19
3.2.3 Population Survey	19
3.2.3.1 Nest Survey	19
3.2.3.2 Feeding Ground Survey	20
3.2.3.3 Roosts Survey	20
3.2.4 Habitat Use	20
3.2.5 Breeding	20
3.2.6 Secondary Data	21
3.2.7 Data Analysis	21
3.2.7.1 Population Size	21
3.2.7.2 Breeding Success	21
3.2.7.3 T-test	21
CHAPTER 4: RESULTS	[23-33]
4.1 Population Status	23
4.1.1 Population Count at Nesting Colony:	23
4.2 Habitat	24
4.2.1 Nesting Habitat	25
4.2.2 Roosting Habitat	25
4.2.3 Feeding Ground	26
4.3 Breeding	27
4.3.1 Nesting	27
4.3.2 Nest Census	27

4.3.3 Nesting Materials	.....30
4.3.4 Eggs	.....30
4.3.5 Breeding Success	.....31
4.4 Flock Size	.....31
4.5 Dead Openbills	.....32
4.6 Predators	.....33

CHAPTER 5: DISCUSSION[34-37]
------------------------------	--------------

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS...	[38-39]
---	---------

REFERENCES[40-44]
------------	--------------

PLATES

APPENDICES

LIST OF TABLES

Table 1.	Species of Storks found in Nepal	2
Table 2.	Population of Asian Openbills in Tikauli Tal	23
Table 3.	Population of Asian Openbills in Lami Tal	23
Table 4.	Population of Asian Openbills at the roosting site	26
Table 5.	Feeding grounds of Asian Openbill	27
Table 6.	Distribution of active and inactive nest of Asian Openbill in Tikauli Tal	28
Table 7.	Distribution of active and inactive nest of Asian Openbill in Lami Tal	28
Table 8.	Comparison of nest number between years	29
Table 9.	No. of eggs in the nest of Lami Tal	30
Table 10.	Nest status and breeding success of Asian Openbills	31
Table 11.	Flock size of Asian Openbills in nesting and post-nesting phases in Tikauli Tal	32
Table 12.	Flock size of Asian Openbills in nesting and post-nesting phases in Lami Tal	32

LIST OF FIGURES

Fig 1. Map of the Study Area	.....13
Fig.2. Mean monthly temp.(⁰ C) recorded at Bharatpur Metrological Station from 2001-2007	.....15
Fig.3. Mean monthly rainfall (in mm) recorded at Bharatpur Metrological Station from 2004, 2005 and 2007	.....15
Fig.4. Mean Monthly Relative Humidity (R.H) recorded at Bharatpur Metrological Station from 2001- 2007	.....16
Fig.5. Vegetation composition in Tikauli Tal area.	.....24
Fig.6. Trees utilized for Nesting Purpose	.....25

ABBREVIATIONS AND ACRONYMS

BCN	=	Bird Conservation Nepal
CNP	=	Chitwan National Park
DNPWC	=	Department of National Parks and Wildlife Conservation
IUCN	=	International Union for Conservation of Nature
PA	=	Protected Area
PWR	=	Parsa Wild Reserve
RH	=	Relative Humidity
AOb	=	Asian Openbill
CFUG	=	Community Forest User Group
UNESCO	=	United Nations Educational, Scientific and Cultural Organization
(°C)	=	Degree Celcius
KBS	=	Kulik Bird Sanctuary
CWRC	=	Centre for Wildlife Rehabilitation and Conservation
MOFSC	=	Ministry of Forest and Soil Conservation