

ASEASONAL VARIATION IN ABUNDANCE AND DISTRIBUTION OF BATS IN SUNSARI-MORANG INDUSTRIAL CORRIDOR



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THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE IN ZOOLOGY
WITH SPECIAL PAPER ECOLOGY AND ENVIRONMENT
CENTRAL DEPARTMENT OF ZOOLOGY
INSTITUTE OF SCIENCE AND TECHNOLOGY
TRIBHUVAN UNIVERSITY
KIRTIPUR, KATHMANDU
NEPAL
AUGUST 2013

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DECLARATION

I, hereby, declare that the work presented in this thesis entitled SEASONAL VARIATION IN ABUNDANCE AND DISTRIBUTION OF BATS IN SUNSARI-MORANG INDUSTRIAL CORRIDOR has been conducted by myself and has not been submitted anywhere for the award of any other degree. All sources and information have been specifically acknowledged by references to the authors or institutions.

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Dibya Raj Dahal

Date..... 2013

RECOMMENDATION

This is to certify this thesis entitled SEASONAL VARIATION IN ABUNDANCE AND DISTRIBUTION OF BATS IN SUNSARI-MORANG INDUSTRIAL CORRIDOR has been carried out by Dibya Raj Dahal under my supervision and guidance. This is the candidate's original work that brings out important findings essential for bats conservation and monitoring. To the best of my knowledge, this thesis has not been submitted for any other degree. I hereby, recommend that the thesis be accepted for the partial fulfillment of the requirements for the degree of Master of Science in Zoology specializing in Ecology and Environment.

.....

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Date:2013

LETTER OF ACCEPTANCE

On the recommendation of supervisor Prof. Khadga Basnet, this thesis submitted by Dibya Raj Dahal entitled “SEASONAL VARIATION IN ABUNDANCE AND DISTRIBUTION OF BATS IN SUNSARI-MORANG INDUSTRIAL CORRIDOR” is approved for examination and submitted to Tribhuvan University for the partial fulfillment of the requirements for the degree of Master of Science in Zoology specializing in ecology and environment.

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CERTIFICATE OF ACCEPTANCE

This thesis submitted by Dibya Raj Dahal entitled SEASONAL VARIATION IN ABUDANCE AND DISTRIBUTION OF BATS IN SUNSARI-MORANG INDUSTRIAL CORRIDOR has been accepted for the partial fulfillment of the requirements for the degree of Master of Science in Zoology specializing in Ecology and environment.

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ABSTRACT

Scientific information about bats in industrial corridors is poor in Nepal. I studied occurrence, abundance, and distribution of bats and their seasonal variation with associated threats along Sunsari-Morang industrial corridor from September 2010 to August 2011. I designed five four kilometers sampling blocks from Itahari to Tankisiniwari covering 26 km of the corridor where I captured bats directly from the roost using mist. Morphometric measurements and photographs of each captured bat were taken for species identification and voucher specimens for unidentified bats were prepared. I prepared baculum and skull of the unidentified species in ecology laboratory of Central Department of Zoology, Tribhuvan University. I calculated Shannon-Wiener diversity index and employed both parametric and non-parametric statistical analysis to test the abundance and distribution and seasonal variation in bats using SPSS version 16.

I recorded 9469 bats belonging to seven species from the corridor with a high diversity index ($H=1.11119$). Population densities fluctuated seasonally responding to temperature variation but the species diversity remained the same in all seasons. I recorded more species of bats from Itahari block and less from Hattimuda and Tankisiniwari blocks. Albino of *Cynopterus sphinx* was also observed and collected as the first record of albino bat from Nepal. Similarly, I recorded *Scotophilus kuhli* from the area confirming its occurrence in Nepal. Anthropogenic factors like deforestation, killing for bush meat, urbanization, and use of pesticides were direct threats to the population and species diversity of bats in the industrial corridor. This study showed that Sunsari-Morang industrial corridor area is a potential site for bat conservation with high diversity and good population size. Awareness campaign and support from the community and government initiatives are necessary to conserve these ecologically and economically beneficial species.

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