

**ABUNDANCE OF *Culex tritaeniorhynchus* Giles AND
Culex gelidus Theobald IN KATHMANDU VALLEY,
NEPAL**



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Institute of Science and Technology

Tribhuvan University, Kirtipur

Kathmandu, Nepal

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DECLARATION

I hereby declare that the work presented in this Dissertation has been done by myself, and has not been submitted elsewhere for the award of any degree. All sources of information have been specifically acknowledged by reference to the authors or institutions.

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RECOMMENDATION

This is recommended that the dissertation entitled “ABUNDANCE OF *Culex tritaeniorhynchus* Giles AND *Culex gelidus* Theobald IN KATHMANDU VALLEY, NEPAL” has been carried out by Mr. Hum Narayan Shrestha for the partial fulfillment of Master’s Degree of Science in Zoology with special paper Entomology. This original work was conducted under our supervision. To the best of our knowledge, this dissertation work has not been submitted for any other degree.

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LETTER OF APPROVAL

On the recommendation of supervisor Prof. Dr. Ananda Shova Tamrakar, this Dissertation Submitted by Mr. Hum Narayan Shrestha entitled “ABUNDANCE OF *Culex tritaeniorhynchus* Giles AND *Culex gelidus* Theobald IN KATHMANDU VALLEY, NEPAL” is approved for the examination and submitted to the Tribhuvan University in partial fulfillment of the requirements for Master’s Degree of Science in Zoology with Entomology as a special paper.

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CERTIFICATE OF ACCEPTENCE

This Dissertation work submitted by Mr. Hum Narayan Shrestha entitled “ABUNDANCE OF *Culex tritaeniorhynchus* Giles AND *Culexgelidus* Theobald IN KATHMANDU VALLEY, NEPAL” has been approved as a partial fulfillment of requirements for the Master’s Degree of Science in Zoology with Entomology as a special paper.

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Abstract

The present study carried out during April, 2009 to September, 2009 in Tokha and Gothatar of Kathmandu district, Hattiban of Lalitpur district and Balkot of Bhaktapur district has reported the vector abundance, indoor and outdoor densities, resting preferences and age grading of both *Culex tritaeniorhynchus* and *Culex gelidus* and hypothesis testing results on significance of monthly variation and areawise variation of both species. During the study period, a total of 30,602 *Culex* mosquitoes were collected. Among them 404 were *Cx tritaeniorhynchus* and 55 were *Cx gelidus*. The study recorded maximum man hour density (9.5) for *Cx tritaeniorhynchus* from Tokha area in August, 2009 in indoor collection. Similarly, the maximum man hour density was 22.0 in September, 2009 in the same site in outdoor collection. The maximum man hour density for *Cx gelidus* in indoor was 0.75 recorded from Gothatar and Tokhaareas in August, 2009. The maximum man hour density (4.0) was recorded in outdoor in August, 2009 from Tokha area for *Cx gelidus*. The highest vector abundance recorded in September, 2009 for *Cx tritaeniorhynchus* was 1.3 and 0.15 for *Cx gelidus* in August, 2009 from Tokha area of Kathmandu district. In case of resting preference, a total of 175 *Cx tritaeniorhynchus* were recorded from indoor and 162 were recorded from outdoor. Altogether 15 *Cx gelidus* were recorded from indoor and 33 were recorded from outdoor in total collected samples. Out of all collected samples, the gravid females of both species were most commonly found while unfed, fullfed and half gravid abdominal conditions were also observed. The highest density of Japanese Encephalitis vectors were recorded from Tokha and Gothatar area of Kathmandu district, although the hypothesis testing results showed no significance difference between all four sites. The resting habit of vectors was higher at indoor habitats in all prevalent months. The abundance of vectors was higher in August and September as revealed by the results of hypothesis testing. The abundance of *Cx tritaeniorhynchus* was higher than that of *Cx gelidus*. This observation of fluctuation in densities, resting preferences and age grading of *Cx tritaeniorhynchus* and *Cx gelidus* would be useful for possible inclusion of the Kathmandu valley in the National Japanese Encephalitis Prevention and Control Programme.

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LIST OF ABBREVIATIONS

ABNT	-	Animal Baited Net Trap
AES	-	Acute Encephalitis Syndrome.
BPKIHS	-	B.P Koriala Institute of Health Science.
CFR	-	Crude Fatality Rate.
CSF	-	Cerebro Spinal Fluid
Cx	-	Culex
DALYs	-	Disability Adjusted Life Years.
EDCD	-	Epidemiology and Disease Control Division.
EDR	-	Eastern Development Region.
HIT	-	Haemagglutination Inhibition Test.
ITNs	-	Insecticide Treated Nets.
JE	-	Japanese Encephalitis.
JEV	-	Japanese Encephalitis Virus
JEV	-	Japanese Encephalitis Virus.
KRV	-	Kamiti River Virus.
MIR	-	Minimum Infection Rate
NPHL	-	Nepal Primary Health Laboratory.
NZFHRC	-	National Zoonoses and Food Hygiene Research Centre.
SCs	-	Sero Conversions
SLE	-	San Luis Encephalitis
VDC	-	Village Development Committee.
WDR	-	Western Development Region.
WHO	-	World Health Organization.
WNV	-	West Nile Virus.