PARASITIC FAUNA OF RODENTS (RODENTIA: MURIDAE) TRAPPED IN KIRTIPUR AND ITS ZOONOTIC IMPORTANCE

A Thesis

Submitted

In partial fulfilment of the requirements for the award of the degree of Master of Science in Zoology with special paper Parasitology

Submitted to

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Nepal

Submitted by

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RECOMMENDATION

This is to recommend that the thesis entitled "PARASITIC FAUNA OF RODENTS (RODENTIA: MURIDAE) TRAPPED IN KIRTIPUR AND ITS ZOONOTIC IMPORTANCE" has been carried out by Robin Rana for the partial fulfillment of Master's Degree of Science in Zoology with special paper Parasitology. This is his original work and has been carried out under my supervision. To the best of my knowledge, this thesis work has not been submitted for any other degree.

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LETTER OF APPROVAL

On the recommendation of supervisor Ranjana Gupta this thesis submitted by Robin Rana entitled "PARASITIC FAUNA OF RODENTS (RODENTIA: MURIDAE) TRAPPED IN KIRTIPUR AND ITS ZOONOTIC IMPORTANCE" is approved for the examination and submitted to the Tribhuvan University in partial fulfilment of the requirements for Master's Degree of Science in Zoology with special paper Parasitology.

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CERTIFICATE OF APPROVAL

This thesis work submitted by Robin Rana entitled "PARASITIC FAUNA OF RODENTS (RODENTIA: MURIDAE) TRAPPED IN KIRTIPUR AND ITS ZOONOTIC IMPORTANCE" has been approved as a partial fulfillment for the requirements of Master's Degree of Science in Zoology with special paper Parasitology.

EVALUATION COMMITTEE

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ABSTRACT

A total of 32 rodents (Rodentia: Muridae) belonging to seven species, (12 *Rattus turkestanicus*, 6 *Rattus nitidus*, 6 *Rattus rattus*, 3 *Niviventer fulvescens*, 3 *Bandicota bengalensis*, 1 *Bandicota indica* and 1 *Mus cervicolar*) were trapped from five different sites of Kirtipur during 2010-2011, using live traps. Almost all rodents (100%) were found to be infected with ecto-parasites. The most prevalent ecto-parasite was *Polyplax spinulosa* (87.5%) followed by *Laelaps echidnina* (78.125%), *Xenopsylla cheopis* (59.375%) and *Ornithonyssus bacoti* (28.125%). A total of 31 rodents (15 males and 16 females) were infected with endo-parasites thus giving an overall infection rate of 96.875%. Statistically **[¡ $^2_{(cal)}$ = 2.0645 and ¡ $^2_{(tab)}$ = 3.84, 1 d.f., P < 0.05]** there was no major difference in the infection rate among the males and females. Ten different endoparasites were identified: 1 trematode, 2 cestodes, 6 nematodes and 1 acanthocephalan species. The identified endo-parasites belonged to trematodes: *Schistosoma* sp.; nematode: *Syphacia* sp., *Nippostrongylus* sp., *Capillaria hepatica*, *Heterakis* sp., *Physaloptera* sp. and *Aspiculuris* sp.; cestodes: *Hymenolepis diminuta*, strobilocercus larvae of *Taenia taeniaeformis* and acanthocephalan: *Moliniformis dubius.* Among the ten species of helminthes identified, six species (60%) have been incriminated as zoonotic. The most prevalent helmith type was the cestode *Taenia taeniaeformis* (strobilocercus larva) (62.5%) followed by nematode *Syphacia* sp. (53.125%) and cestode *Hymenolepis diminuta* (12.5%). Prevalance of infected liver by the eggs of *Capillaria* sp. was 43.75%. The following parasites *Schistosoma* sp., *Syphacia* sp., *Capillaria hepatica*, *Hymenolepis diminuta*, *Taenia taeniaeformis*, and *Moliniformis dubius* are considered as zoonotic and are of medical importance. *R. nitidus* was found to harbor maximum number of endo-parasite than other rodent species. Statistically **[$F_{(cal)}$ = 11.196 and $F_{(tab)}$ = 2.175,(for v_1=6 and v_2=84), P < 0.05]** it was found that there was significant difference in the prevalence of parasites between the seven different rodent species. The highest prevalence of parasitic infection in rodents was found in household areas (28.125%), followed by agricultural field (25%), departmental stores (21.875%), vegetable market (15.625%) and garbage site (6.25%). The diversity and prevalence of parasites were statistically **[$F_{(cal)}$ = 7.8 and $F_{(tab)}$ = 2.447,(for v_1=4 and v_2=56), P < 0.05]** found to be affected by the type of sites, with household area being at high risk area for zoonotic disease transmission.

Keywords: rodents, ecto-parasites, endo-parasites, zoonotic, Kirtipur

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LIST OF ABBREVIATIONS

Abbreviated form	Details of abbreviations
Agri.	Agricultural
CDZ	Central Department of Zoology
CVL	Central Veterinary Laboratory
Dept.	Departmental
E	East
GI	Gastro Intestinal
Km	Kilo-meter
N	North
NAST	National Academy of Science and Technology
No.	Number
NTNC	National Trust for Nature Conservation
m	Meter
PN.	Photograph Number
SMCRF	Small Mammal Conservation and Research Foundation
sq. km	Square Kilo-meter
TU	Tribhuvan University
VDC	Village Development Community
Veg.	Vegetable