

THE TAXONOMY OF MUSCOID FLIES IN THE FAMILIES MUSCIDAE  
(IN THE TRIBE MUSCINI) AND CALLIPHORIDAE IN SELECTED  
AREAS IN DAVAO CITY, WITH SOME NOTES ON THEIR  
BIONOMICS, MEDICAL IMPORTANCE, AND  
GEOGRAPHICAL DISTRIBUTION

---

A Thesis  
Presented to  
the faculty of the Graduate School  
University of San Carlos

---

In Partial Fulfillment  
of the requirements for the Degree  
Master of Science in Biology

---

by  
Fe Reyes Magpayo  
September 1987

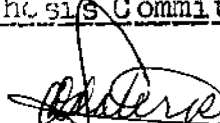
OCT 10 1988

196018 C.1  
UNIVERSITY OF SAN CARLOS  
LIBRARY


APPROVAL SHEET

This thesis entitled THE TAXONOMY OF MUSCOID FLIES IN THE FAMILIES MUSCIDAE (IN THE TRIBE MUSCINI) AND CALLIPHORIDAE IN SELECTED AREAS IN DAVAO CITY, WITH SOME NOTES ON THEIR BIONOMICS, MEDICAL IMPORTANCE, AND GEOGRAPHICAL DISTRIBUTION, prepared and submitted by Fe Reyes Magpayo in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE IN BIOLOGY has been examined and is recommended for acceptance and approval for ORAL EXAMINATION.

Thesis Committee

  
CRISTOBAL G. PLATEROS, M.S.


Adviser

  
FILIPPINA B. SOTTO, M.S.M.B.

Member

  
HUMaida A. SUMALON, M.S.

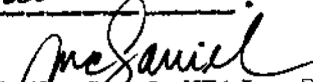
Member

  
MONTANA C. SANJUEL, Ph.D

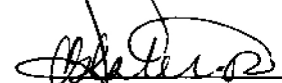
Member

-----  
PANEL OF EXAMINERS

Approved by the Committee on Oral Examination with a grade Passed

  
MONTANA C. SANJUEL, Ph.D

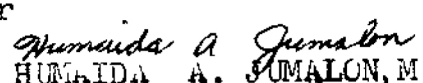
Chairman

  
CRISTOBAL G. PLATEROS, M.S.

Adviser

  
FILIPPINA B. SOTTO, M.S.M.B.

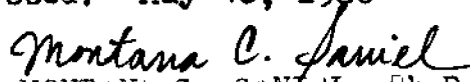
Member

  
HUMaida A. SUMALON, M.S.

Member

Accepted and approved in partial fulfillment of the requirements for the Degree of MASTER OF SCIENCE IN BIOLOGY.

Comprehensive examination passed: May 16, 1980

  
MONTANA C. SANJUEL, Ph.D  
Dean, Graduate School

Date: September 10, 1987

## ACKNOWLEDGEMENTS

The writer is indebted in many ways to the following persons, without whose assistance this study could have not been made possible:

The Association of Christian Universities in the Philippines for a study grant awarded to the writer in 1979-1980;

Rev. Fr. Emeterio J. Barcelon, S.J., Mrs. Juliet Bangayan Koresh, and Rev. Fr. Gorgonio Esguerra, S.J. past President, Research Director, and present Dean of the College of Arts and Sciences, respectively, of Ateneo de Davao University for some financial aids and academic privileges extended to the writer;

The Senior Biology students of batch 1983 and of 1984 for their studies on flies from where the present study was able to obtain valuable information on the bionomics, particularly on the breeding habits of some species;

The Biology Department of the Ateneo de Davao University for the use of laboratory facilities;

Rev. Fr. Enrique V. Schoenig, S.V.D., who directed the writer's fate towards working along the line of Medical Entomology;

Dr. Nelia Salazar of the University of the Philippines Institute of Health for paving the way

towards establishing contact with Asian fly experts, ending the almost two years of groping in the dark working with flies;

Dr. Rokuro Kano, President of the Tokyo Medical and Dental University and the Ministry of Education, Science, and Culture of Japan for the rare opportunity of undergoing an overseas training in Medical Zoology;

Dr. Satoshi Shinonaga and Dr. Itsuro Sugiyama of the Medical Zoology Department of Tokyo Medical and Dental University for sharing their expertise on the Muscidae and Sarcophagidae, respectively;

Dr. Hiromu Kurahashi of the Medical Entomology Department, Japan Institute of Health, for the gift of confidence in working with calliphorid flies;

Mr. Adrian C. Pont, Head of Diptera, British Museum (Natural History) for some material help;

Dr. Neal Evinhuis, Head of Diptera, Bishop Museum, Hawaii, for a generous loan of specimens;

Sister Julita Ruelo S.Sp.S. for some very useful advice on the technical aspect of keeping taxonomical records;

The Philippine Eagle Conservation Program for the accommodation and the chance to work on the fauna of the Mt. Talomo area, particularly acknowledging Domingo Tadena, Camp Manager, for his assistance in many of



v

the writer's collection trips to the area;

Engr. Panyarak Sae-Ngan, Nina Ingle, Mary Jean Arguillas, Bill Wischusen, and Fr. Edward Wood for the encouragements and the push to complete this work;

Her mother who stood by her throughout the preparation of this manuscript, providing her the necessary understanding, moral support, and above all, the spiritual guidance she felt her daughter was already losing in her hectic working schedules and in trying to finalize this draft; and

Her Dad, to whom, also, this thesis is dedicated.

FE REYES MAGPAYO

## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT .....	iii
LIST OF FIGURES .....	viii
LIST OF TABLES .....	ix
LIST OF PLATES .....	x
<b>CHAPTER</b>	
1. INTRODUCTION .....	1
Purpose of the Study .....	4
Significance of the Study .....	5
Scope and Limitations .....	6
Review of Related Literature .....	7
2. MATERIALS AND METHODS .....	16
The Study Area .....	16
Sampling Period.....	18
Collection and Killing Methods .....	18
Mounting, Labelling, Drying, and Storage	19
Methods of Identification .....	21
Morphology of Muscoid Flies .....	22
3. TAXONOMIC ACCOUNTS AND DISCUSSIONS .....	38
Family Muscidae.....	40
Genus <u>Musca</u> .....	42
Genus <u>Orthellia</u> .....	77
Genus <u>Morellia</u> .....	91

	Page
Family Calliphoridae .....	97
Genus <u>Phumosia</u> .....	101
Genus <u>Polleniopsis</u> .....	120
Genus <u>Tainanina</u> .....	124
Genus <u>Onesia</u> .....	128
Genus <u>Hemipyrellia</u> .....	135
Genus <u>Licilia</u> .....	141
Genus <u>Booponus</u> .....	160
Genus <u>Bengalia</u> .....	166
Genus <u>Chrysomya</u> .....	185
Genus <u>Idiella</u> .....	203
Genus <u>Stomorphina</u> .....	206
Genus <u>Rhynchomya</u> .....	210
Genus <u>Isomyia</u> .....	213
4. SUMMARY AND RECOMMENDATIONS .....	218
REFERENCES .....	224
APPENDIX .....	233
PLATES .....	237
CURRICULUM VITAE .....	264

## LIST OF FIGURES

Figure		Page
1	Map of Davao City showing city proper and Mt. Talomo sampling areas.....	17
2	Head of a muscoid fly.....	23
3	Lateral view of thorax of a muscoid fly.....	28
4	Dorsal view of thorax of a muscoid fly.....	31
5	Dorsal and ventral views of abdomen of a muscoid fly.....	32
6	Wing of a muscoid fly.....	34
7	Leg of a muscoid fly.....	36
8	<u>Onesia minuta</u> (Curran), male genitalia and sternite.....	131
9	<u>Lucilia calviceps</u> Bezzi, male genitalia and sternite.....	157
10	Larvae of <u>Booponus intonsus</u> Aldrich, taken from a carabao hoof.....	164
11	<u>Bengalia lyneborghi</u> James, male genitalia and sternite.....	170
12.	<u>Bengalia torosa</u> Wiedemann, male genitalia and sternite.....	174
13	<u>Bengalia</u> sp. nov. nr. <u>latro</u> , male genitalia and sternite.....	178
14	<u>Bengalia</u> sp. nov. 1, male genitalia and sternite.....	183
15	<u>Chrysomya schoenigi</u> sp. nov., male genitalia, sternite and fifth tergite of female....	196

## LIST OF TABLES

Table	Page
1 Summary of species and percentages of each caught during the regular sampling period of May 1982 to March 1983 for the Davao City proper sampling area, and from January 1983 to October 1983 for the Mt. Talomo sampling area, including records of irregular samplings done for the latter until April 1985.....	234
2 Summary of distinctive characters for species belonging to the Tribe Muscini of the Family Muscidae in this study.....	237
3 Summary of distinctive characters for the calliphorid species considered in this study.....	239

LIST OF PLATES

	Page
Plate 1. <u>Abdomens of male Musca</u> .....	246
Fig. 1. <u>Musca domestica</u> Linnaeus	
2. <u>Musca inferior</u> Stein	
3. <u>Musca bakeri</u> Patton	
4. <u>Musca convexifrons</u> Thomson	
Plate 2. <u>Abdomens of male Musca</u> .....	247
Fig. 1. <u>Musca seniorwhitei</u> Patton	
2. <u>Musca craggi</u> Patton	
3. <u>Musca crassirostris</u> Stein	
4. <u>Musca planiceps</u> Wiedemann	
Plate 3. <u>Abdomens of male Musca</u> .....	248
Fig. 1. <u>Musca conducens</u> Walker	
2. <u>Musca ventrosa</u> Wiedemann	
3. <u>Musca sorbens</u> Wiedemann	
Plate 4. <u>Heads of female Orthellia</u> .....	249
Fig. 1. <u>Orthellia lauta</u> (Wiedemann)	
2. <u>Orthellia gavis</u> (Walker)	
3. <u>Orthellia indica</u> (Rob.-Des.)	
4. <u>Orthellia timorensis</u> (Rob.-Des.)	
5. <u>Orthellia coeruleifrons</u> (Macquart)	
Plate 5. ....	250
Fig 1. Dorsal view of female and male <u>M. domestica</u>	
2. Dorsal view of female and male <u>M. inferior.</u>	
3. Dorsal view of female and male <u>M. bakeri.</u>	
4. Dorsal view of female and male <u>M. convexifrons.</u>	
Plate 6. ....	251
Fig. 1. Dorsal view of female and male <u>M. seniorwhitei.</u>	
2. Dorsal view of female <u>M. craggi</u>	
3. Dorsal view of female and male <u>M. crassirostris.</u>	
4. Dorsal view of female and male <u>M. planiceps.</u>	