

TAXONOMY, DISTRIBUTION AND MEDICAL IMPORTANCE
OF MOSQUITOES IN MT. APO REGION

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

Celso Amante II

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This thesis entitled TAXONOMY, DISTRIBUTION AND MEDICAL IMPORTANCE OF MOSQUITOES IN MT. APO REGION, prepared and submitted by Mr. Celso Amante II 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.

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ABSTRACT

A mosquito survey was conducted in Mt. Apo region and area near Davao City and of adjacent towns as far as Nabuntun to the north. The area under survey was from the sea shore to the topmost part of Mt. Apo, an elevation of around 2,954 m.

The 164 samples in vials of mosquito larvae and adults were brought to the laboratory for identification. For the purpose of identification and evaluation, about 3,096 individual specimens were handled. There were 11 genera found in the collections. Genus Aedes was commonly encountered. The highest number of genera were collected in Davao City and in Eden with six genera respectively; next highest were collected in Baclayan and in Kulan with five genera respectively. The lower number of genera in the other areas seems to reflect the widespread destruction of the original vegetation resulting into reduction of sources of water, as well as of niches capable of retaining moisture. Out of 11 genera, there were 42 mosquito species identified. Nine mosquito species were of medical importance and most of them breed in artificial containers. There were 5 species of Aedes that are disease transmitters, three of Culex and one of Mansonia.

Forest and densely inhabited areas have the greatest number of species. Increasing human population accounts in increase of certain medically important species. Medically important species are mainly found in the lowlands most especially in the City.

The study will tell us that dangerous mosquito species are increasing due to the wanton activities of man, increase of population in places previously uninhabited and lack of sanitation on the part of individuals. Therefore control measures should be applied in order to prevent the increase of species thriving in the habitat. More specifically, control measures against Aedes albopictus are necessary in all stations except in Baclayan and Kulan. Campaigns against Aedes aegypti have to be carried out in the City proper, in Tagum and in Kidapawan.

It is hoped that results of this study would form a basis for public health officials to establish measure that would control the population of medically important mosquito species like those found in the localities studied.

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INTRODUCTION

Mosquitoes have been recognized as the most dangerous group of insects (Hunter, Frye, Swartzwelder, 1960). Therefore, the entire group ought to be studied. In the Philippines however, this study is mostly confined to the genus, Anopheles, the carrier of Malaria (Darsie, 1969). Around 240 species are known and 50 species are considered carriers of Malaria throughout the world. Their ecology - areas and breeding places - are mapped and described in detail (Ramos, 1970).

Due to recent advances in medical research another group has become more prominent, the genus Aedes. The carriers of hemorrhagic fever, dengue fever, filariasis, encephalitis, chikungunya and others belong to this group, of which the most dangerous species is Aedes aegypti (Rao, 1964, Myers et. al. 1965, Krishnamurthy et. al., 1965). Only general ecological studies or very limited detailed studies have been made so far in the Philippines (Schoenig, 1972).

There is a need, therefore, of more extensive studies of all species which endanger human population. In addition, the study should also be extended to all genera of mosquitoes for they form an ecological unit. Besides some species may exist which are not yet recognized

as carriers of diseases or which may be carriers in some area while they are considered harmless in another area.

Mindanao in general and Davao in particular belongs to the so-called "land of promise" (Alip, 1954). However, it is also known that various diseases such as malaria, dengue and haemorrhagic fever, etc. are rampant. These are carried primarily by mosquitoes.

Much has been done in the study of Philippine Mosquitoes (Russel, 1934; Delfinado et. al., 1962; Delfinado 1966; Basio 1971). No intensive study has ever been made on the mosquitoes in Mt. Apo region and its environment. The first documented mosquito collection in Mt. Apo was made in 1946 in the course of an expedition headed by Dr. Harry Hoogstraal, an officer of the United States Armed Forces Medical Corps. This group of experts investigated wide areas and made intensive collections of biological material from August 9 to November 25 of that year. Since then, this fabled mountain has been frequently mentioned in literature (Delfinado, 1966); however no list of mosquitoes collected has been published since Bohart and Farner (1944) started the taxonomic work on Philippine mosquitoes which included certain species from Sibulan River. Recently, some fragmentary collections were undertaken by the Malaria Control Section in their pioneer

malaria studies in the adjoining lowlands of Mt. Apo; other occasional collections were carried out by the group of Japanese scientists in 1970, in connection with their mosquito control program in and around Mt. Apo (Jumalon, personal communication).

The latest extensive and intensive expedition was carried out on May 16 to July 4, 1974 by a team from the University of San Carlos under the sponsorship of the Deutsche Forschungsgemeinschaft of West Germany and under the leadership of Dr. Enrique Schoenig, chairman of the Biology Department of the University of San Carlos, an ecologist whose specific line of work is mosquito research. He was assisted by two well-versed plant taxonomists, one expert entomologist and the author, a graduate student, who made a mosquito survey of the region in connection with his thesis research. The expedition was organized to survey plants and animals, especially insects related to the present ecological conditions before they are drastically changed. The mosquito fauna was included in the study because of its influence upon the well-being of the human population.

Mt. Apo presently hailed as one of the country's major tourist attractions was declared a national park in 1936 by the late President Manuel L. Quezon. Nonetheless,