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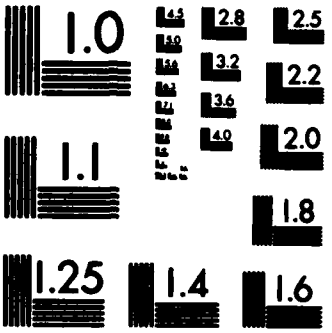

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Mosquito Information Management Project (MIMP): APPLICATION OF A COMPUTERIZED GENERAL PURPOSE INFORMATION MANAGEMENT SYSTEM (SELGEM) TO MEDICALLY IMPORTANT ARTHROPODS (DIPTERA: CULICIDAE)

Annual Report

Terry L. Erwin

August 1985

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Mosquito Information Management Project is a collaborative venture between the Walter Reed Biosystematics Unit, Walter Reed Army Institute of Research, and the Department of Entomology, National Museum of Natural History, Smithsonian Institution. The project was established in September 1979 to develop a computer-based systematic and ecological data base for the approximately one million mosquito specimens in the National Museum of Natural History collection. This collection is the largest and most complete mosquito collection in the world and

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represents a national treasure. The data management system, SELGEM (SElf-Generating Master), was selected as the primary data storage/management system. Data recorded on collection forms are submitted to a Honeywell Series 60 Level 66/80 computer system via a Nixdorf 600/55 minicomputer data entry system.

During this reporting period data from additional 2,596 collection forms, representing 70,649 specimens, were entered into the computer data base.

Development continued for the seven separate geographic files, incorporating data from Mexico and Central America, South America, the Caribbean Region and Eastern Africa. These files allow for a rapid and inexpensive search capability that will be a major advantage as the data base expands.

B

FOREWORD

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INTRODUCTION

The National Museum of Natural History, Smithsonian Institution (SI), houses a mosquito collection of over one million specimens from all over the world. This collection is the largest of its kind and is well curated. During the last 20 years the collection has grown 5-fold, primarily due to several U.S. Army Medical Research and Development Command contracts, i.e., the Southeast Asia Mosquito Project (SEAMP), the Mosquitoes of Middle America Project (MMAP) and the Medical Entomology Project (MEP). World areas that are particularly well represented in the collection are the Nearctic, Neotropical, Oriental and South Pacific faunal regions. These specimens, combined with their associated collection data/records, represent a major scientific resource for Medical Entomologists, Epidemiologists and Public Health Workers. Unfortunately, the collection has received very little attention to date (except by taxonomists).

The Mosquito Information Management Project (MIMP) was established in 1979 to develop this outstanding source of data on known and potential vectors of human pathogens into a computer-based systematic and ecologic data base. This computer file is based on data from specimens identified by taxonomic authorities and (1) provides important, easily accessible, systematic and ecologic data for species of known or potential importance to the military, public health organizations and other scientific and environmental agencies; (2) enhances current and future laboratory and field mosquito research efforts; (3)provides knowledge of deficiencies in the National Mosquito Collection and suggests new collection strategies; (4) alleviates managerial problems by providing a timely and cost-efficient collection inventory; and (5) serves as a model for the storage/analysis of mosquito biological data on a world-wide level.

The project is located at the Smithsonian Institution and works in close association with: (1) Walter Reed Biosystematics Unit (WRBU), from the Walter Reed Army Institute of Research (WRAIR); (2) the Systematics of Aedes Mosquitoes Project (SAM); (3) Department of Entomology, Smithsonian Institution; and (4) Systematic Entomology Laboratory, U.S. Department of Agriculture. It was designed to be responsive to the needs of these organizations, as well as other governmental or institutional scientific organizations.

REVIEW OF PROGRESS FOR THE PERIOD 1 SEPTEMBER 1984 TO 31 AUGUST 1985

I. Personnel

A. Project Manager Charlotte Burnett(IS-7) resigned her position as of 4 October 1984.

B. Museum Technician Ellen Alers (IS-5) was hired 15 November 1984 to fill Ms. Chalfant's position, vacated 8 June 1984.

C. Prospective Project Manager declined the position. Subsequently, offered to and accepted by Ms. Alers, 17 January 1985.

D. Museum Technician (IS-5) Letitia Neal was hired and joined MIMP 3 June 1985 filling a vacancy which has been open since 8 June 1984. *

* Note: Since Ms. Chalfant's leaving in June of 1984 until Ms. Neal's arrival in June of 1985, MIMP has been run by one person. This includes a 42 day hiatus when the unit was vacant, between the time Ms. Burnett left and Ms. Alers was hired. However, even with this handicap MIMP has maintained a very respectable management and data entry record.

II. Data Input

A. During this reporting period, data from an additional 2,596 collection forms, representing 70,649 specimens were entered onto computer tape. Of these, 1917 collection forms representing 47,889 specimens originated from the John N. Belkin collection.

An additional 108 collection forms representing 4449 specimens from Israel were collected by Harrison and Harbach.

112 collection forms representing 1647 specimens from Senegal were collected by Faran, Pecor and Turell establishing a new file -- Western Africa.

With the above entries, data from a total of 18,052 collection forms representing 468,109 specimens have been entered into the data base. Data from most of the Belkin Central American and South American collections including those from Mexico and Brazil, have been entered onto computer tape.

B. Seven separate geographic masterfiles have been established to simplify and speed up the efficiency of queries. The use of such files quickly reduces the search effort for specific queries, and will greatly reduce computer charges as the data base expands. The nine files established to date are:

1) Mexico and Central America
2) Western South America
3) Northeastern South American
4) Southeastern South America
5) Greater Antilles
6) Lesser Antilles
7) Middle East
8) Eastern Africa
9) Western Africa

III. Queries

During the year, the MIMP staff received and answered over (16) requests for information from computer files, data entry into computer files, information from data standards and map and gazetteer collections. An additional (7) requests for computer-generated maps from World Data Bank II. Some of these were modified by hand, adding place names, titles, captions and inking boundaries.

A. Data entry requested for various collections included:

1) Collections of mosquitoes from Israel collected by LTC Harrison (WRBU) and Thomas V. Gaffigan (WRBU).

2) Collections of mosquitoes from Senegal collected by MJR M.E. Faran (WRAIR) , Michael Turell and James Pecor (WRBU).

3) Collections of nectar feeding mosquitoes from Costa Rica collected by W.A. Foster (Ohio State University). Identified at WRBU by E.L. Peyton.

4) All available collections from Haiti and the Dominican Republic requested by M.E. Faran.

B. Special requests for information and printouts of collections from the computer included:

1) MJR M.E. Faran requested information on species, habitat and locality of mosquitoes from Haiti and the Dominican Republic.

2) Marco F. Suarez of the Servicio Nacional de rradicacion de l Malaria, Bogota, Columbia,

requested a listing of all the Anopheles species in Columbia with mass and individual rearings information.

C. Computer-generated maps, some with distribution points for mosquito collections in a given country included:

1) Dr. Harry Savage (WRBU) requested a map showing the distribution of An. (Nys.) bennarochi in Central America.

2) Cpt. Daniel Strickman (WRBU) requested a map showing the distribution of collections made by four different collectors in Honduras. This will help him to determine possible future collection sites.

IV. Other Activities

A. MIMP has purchased new IBM computer equipment with lapsed personnel funds from 1984. This is in accordance with Smithsonian's migration from the Honeywell Series Level 66/80 mainframe to an IBM 4381 Model 2 mainframe. The associated software will diversify and make the data base more accessible. This will make manipulation of the data faster and give the operator more flexibility than ever before

B. The Project Manager and Technician will devote much of their time in the coming months to the mastery of the new software and data management system. They both will attend classes separately and teach one another what they have learned. This will inspire constructive "play" that will lead, once the system is mastered, to the tailoring and refinement of the data base retrieval and manipulation that will take place in the future.

C. Action has been taken for the temporary hire once the system arrives, of a Museum Aide (IS-4) to take over the data entry while the Project Manager and Technician are learning the new system.

D. The Project Manager attened WRBU's external review and offered a report concerning the present status and future plans of MIMP in relation to WRBU.

E. During the year MIMP received (24) visitors from the following organizations:

1) Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington, DC; 2) U.S. Army Medical Research Institute for Infectious Diseases, Fort Detrick, MD; 3) Walter Reed Army Institute of Research, Washington, DC;

4) AFRIMS, Thailand; 5) American Registry of Professional Entomologists, Chesepeake Chapter; 6) Department of Parasitology, University of Malaya, Kuala Lumpur, Malaysia; 7) Uppsala University, Uppsala, Sweden; 8) Mosquito Control Program; Fairfax County, VA; 9) OPS/OMS Bogata, Columbia.

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