

GUIDELINES FOR MEASURING PROFICIENCY AS AN AID IN MOSQUITO ABATEMENT PROGRAM ASSESSMENT

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INTRODUCTION

A fresh approach to the appraisal of mosquito control programs is long overdue. With the increase in ecological awareness, the acceptance of integrated control concepts, advances in biological and chemical control methods, and improvements in source reduction techniques, a more efficient means of evaluation must evolve.

The authors have noted many cases where the prime guide for evaluating abatement activities has been the ability, on the part of a program director, to display a substantial increase in the mosquito control budget, i.e., the larger the budget, the more successful the program. In the natural course of government administration the responsibility for the expenditure of large sums of tax dollars for mosquito control often falls upon individuals who, themselves, know little about mosquito abatement practices and who, in turn, bestow upon a supposed or announced expert the authority to organize and conduct control activities. Thus, there must be provided a sophisticated method of program assessment to assure against mismanagement.

This is a guide to assist Mosquito Control Program Managers, Department Heads, County Commissioners and County and State Health Department officials in evaluating their mosquito control programs. It is also meant to be used as an aid in organizing a new program to

be evaluated later. The guide is thus applicable to most mosquito control programs, regardless of size or stage of development. And, perhaps most important, since this system can be used by the uninitiated, it can serve to eliminate the hazards associated with total reliance upon the single authority responsible for organizing and/or managing mosquito control activities. To the authors' knowledge, there is no formal system for this purpose.

In preparing the guide, the writers analyzed a mosquito control program in an attempt to define its essential characters. Whether or not it is expedient for a given program to employ all of these characters, at a given time, is irrelevant. Rather, it is important that the characters be recognized and brought to the attention of those ultimately responsible for the appropriation of operating funds.

Carrying the approach one step further, values were arbitrarily assigned to the characters. As a result, it was possible to measure the progress of our own program in Bucks County, Pennsylvania. It is important to understand that the significance of acquiring a low proficiency rating under this specific value system (which our program received) is that of providing justification for development of neglected areas, rather than causing embarrassment to the program director for receiving a low score.

It should be emphasized that the intent here is to propose a *system* rather than a *standard*. It is, therefore, suggested that each individual organization using the system establish its own standard for use in the evaluation of its own operation.

It is not intended for this guide to

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stand unmodified; rather, it is suggested that adjustments be made to conform with local program objectives, policies and primary approach needs. It is conceivable that the reader may not agree with the authors' opinions regarding relative values arrived at in the "Program Evaluation Breakdown." This is especially true for the more advanced programs where considerable effort is being placed upon source reduction. Under such circumstances, source reduction activities should be weighted more heavily than suggested. It is also conceivable that the reader may disagree with the authors' description of the technical qualifications required for the ideal program manager. However, it is strongly suggested that any individual responsible for directing mosquito control operations be knowledgeable in the field of entomology. With the exception of the possession of a baccalaureate degree in entomology, a professional engineer or anyone else, for that matter, certainly could and should possess the other technical qualifications.

Finally, the reader must be reminded of the error involved in failing to recognize the interdependence of all evaluation areas.

EXPLANATION

The proposed system is designed to measure program proficiency as opposed to effectiveness. Effectiveness can only be measured by mosquito survey activities. Accordingly, 1000 points is established as the maximum score attainable to a mosquito control program considered to be performing at a high level of proficiency. For evaluation purposes, the mosquito control program is divided into nine major areas which are each provided a maximum value to be earned for demonstrating a high proficiency level. The value given each specific area is established by the writers, according to what they consider its respective degree of importance within the entire program. Each of the nine major areas is then broken

down into its important elements. The elements are likewise assigned maximum values based on the writers' opinion as to degree of importance within a major area. Thus, major areas and elements with their respective values are presented as follows:

1. Program Administration: (150 points)
 - a. Technical qualifications (40)
 - b. Responsibility & policy (20)
 - c. Planning (60)
 - d. Records (30)
2. Facilities and Equipment: (100 points)
 - a. Facilities (25)
 - b. Equipment (75)
3. Mosquito Survey Activities: (200 points)
 - a. Larval surveys (75)
 - b. Adult mosquito surveys (75)
 - c. Other surveys (50)
4. Mosquito Control Activities: (200 points)
 - a. Chemical control practices (150)
 - b. Source reduction practices (25)
 - c. Biological control activities (25)
5. Emergency Preparedness: (50 points)
 - a. Plan of action (25)
 - b. Budget (5)
 - c. Surveillance (20)
6. Training and Career Development: (100 points)
 - a. Training (60)
 - b. Continuing education (40)
7. Public Education and Public Relations: (100 points)
 - a. News media (50)
 - b. Group contact (25)
 - c. Literature (25)
8. Inter-Governmental Coordination: (50 points)
 - a. Liaison (20)
 - b. Training program (10)
 - c. Information service (10)
 - d. Recommendations (10)
9. Reporting: (50 points)
 - a. Quarterly reports (20)
 - b. Annual report (25)
 - c. Distribution (5)

Below, under the heading "Evaluation Guidelines," each of the above elements is broken down into a series of questions which are again provided numerical values as determined by the writers. To arrive at a score each question is carefully weighed against predetermined qualifications to decide upon a degree of compliance. For example, under 1.1. Technical Qualifications:, paragraph 1.1.1. "Does the Program Director have at least 5 years experience as a practicing entomologist, 2 years of which have been in a supervisory capacity?" (10 points)—if none of the requirements are met the score is 0; if all the requirements are met the score is then, of course, 10. Partial fulfillment of the requirements is deserving of a partial score which is determined by the examiner. It is important that the score given for each question be based on fact or the existence of records which can verify or substantiate a degree of involvement. Evaluation guidelines are thus presented as follows:

EVALUATION GUIDELINES

1. PROGRAM ADMINISTRATION (150)

1.1. Technical Qualifications: (40)

1.1.1. Does the Program Director have at least 5 years experience as a practicing entomologist, 2 years of which have been in a supervisory capacity? (10)

1.1.2. Does he have at least 2 years experience working with the family Culicidae (mosquitoes)? (5)

1.1.3. Does he have knowledge of epidemiology of mosquito-borne diseases, mosquito life history, and mosquito ecology? (10)

1.1.4. Is he familiar with mosquito control practices and mosquito control equipment? (10)

1.1.5. Does he have a baccalaureate degree with a major in entomology? (3)

1.1.6. Is he familiar with basic engineering and sanitation principles? (2)

1.2. Responsibility and Policy: (20)

1.2.1. Is there a clear-cut delegation of responsibility with the Director having the authority to establish program goals? (10)

1.2.2. Is the Program Director influential in the establishment of those policies which directly pertain to the efficient operation of a mosquito control program? (10)

1.3. Planning: (60)

1.3.1. Is work being conducted according to a program plan which clearly defines program goals and objectives? (20)

1.3.2. Are goals and objectives realistic and measurable? (15)

1.3.3. Is work being conducted according to a scheduled time-table? (15)

1.3.4. Is planning an ongoing activity oriented toward the development of integrated control and source reduction? (10)

1.4. Records: (30)

1.4.1. Are complaints with resulting corrective actions properly recorded? (4)

1.4.2. Are larval and adult mosquito survey results properly recorded? (14)

1.4.3. Is there a workable inventory maintained on equipment and supplies? (10)

1.4.4. Are meaningful records kept on program personnel? (2)

2. FACILITIES AND EQUIPMENT (100)

2.1. Facilities: (25)

2.1.1. Is there adequate office and laboratory space? (10)

2.1.2. Are there suitable field fa-

cilities for chemical storage and mixing, vehicle storage and maintenance, etc.? (15)

2.2. *Equipment:* (75)

2.2.1. Is there adequate office and lab equipment such as typewriters, telephones, microscopes, etc.? (10)

2.2.2. Is there adequate mosquito control equipment and supplies such as power and hand sprayers, foggers, vehicles, etc.? (25)

2.2.3. Is there adequate survey equipment and supplies such as light traps, boots, etc.? (10)

2.2.4. Is the equipment being properly maintained and kept in good operating condition? (30)

3. MOSQUITO SURVEYS: (200)

3.1. *Larval Surveys:* (75)

3.1.1. Is each breeding area properly identified and marked on a map? (12)

3.1.2. Do individual records indicate species and date collected? (10)

3.1.3. Do individual records classify type and degree of breeding? (10)

3.1.4. Are photographs kept of major breeding areas? (3)

3.1.5. Are recommendations for permanent elimination provided for major breeding areas? (10)

3.1.6. Are records kept of control action history? (10)

3.1.7. Are survey and other data used to guide control actions? (20)

3.2. *Adult Mosquito Surveys:* (75)

3.2.1. Are data collected by dependable technicians trained in the scientific method and guided by proper supervision? (15)

3.2.2. Are surveys properly de-

signed to provide accurate and useful information? (15)

3.2.3. Are data collected simultaneously by various techniques (light trap, bait catch, etc.) expressed and recorded in such a way as to be useful in the future—i.e., expressed as an index, and compared with meteorological records? (15)

3.2.4. Are survey results being used to determine extent and nature of the mosquito problem? (15)

3.2.5. Are survey results being used to determine effectiveness of control activities? (15)

3.3. *Other Surveys:* (50)

3.3.1. Is larviciding being monitored to disclose and prevent harmful effects on aquatic populations, i.e. fish, turtles, waterfowl, etc.? (20)

3.3.2. Are aduiciding operations being monitored to prevent harmful effects to terrestrial non-target organisms? (20)

3.3.3. Are insecticide susceptibility studies properly performed for major pest species? (10)

4. MOSQUITO CONTROL ACTIVITIES: (200)

4.1. *Chemical Control Practices:* (150)

4.1.1. Are larviciding activities guided by larval survey results (35)

4.1.2. Are non-persistent chemicals used and applied at recommended dosage rates? (30)

4.1.3. Are chemical applications made only under the supervision of qualified and trained individuals? (30)

4.1.4. Are safety standards set for

- and followed by those handling insecticides? (30)
- 4.1.5. Are new control methods being tested? (25)
- 4.2. *Source Reduction*: (25)
- 4.2.1. Are the total number of breeding areas being reduced as a result of permanent elimination activities? (11)
- 4.2.2. Are there existing codes or ordinances prohibiting the maintenance of areas suitable for the breeding of mosquitoes? (7)
- 4.2.3. Are the codes or ordinances enforced? (7)
- 4.3. *Biological Control*: (25)
- 4.3.1. Are mosquito-eating fish being used in mosquito breeding areas? (10)
- 4.3.2. If fish are being used, are releases properly monitored to determine effectiveness? (15)
5. *EMERGENCY PREPAREDNESS*: (50)
- 5.1. *Plan of Action*: (25)
- 5.1.1. Are emergency conditions defined under which action will be taken? (15)
- 5.1.2. Are control actions predetermined for given emergency situations? (10)
- 5.2. *Budget*: (5)
- 5.2.1. Is there a reserve fund budgeted and readily available for emergency situations? (5)
- 5.3. *Surveillance*: (20)
- 5.3.1. Are test animals maintained throughout area of responsibility to detect encephalitis virus activity? (5)
- 5.3.2. Are blood samples obtained from test animals on a regular basis for laboratory evaluation? (5)
- 5.3.3. Are periodic blood samples collected from wild avian populations for laboratory evaluation? (4)
- 5.3.4. Are adult mosquitoes collected, prepared and shipped to a Federal or State laboratory for analysis? (4)
- 5.3.5. Are communications maintained with Center for Disease Control, Atlanta, Georgia and other applicable laboratories so as to be aware of conditions in surrounding areas? (2)
6. *TRAINING AND CAREER DEVELOPMENT*: (100)
- 6.1. *Training*: (60)
- 6.1.1. Is there a formal training program prepared and being utilized? (25)
- 6.1.2. Are there sufficient training aids available (projectors, slides, films, posters, etc.)? (15)
- 6.1.3. Is a collection being maintained of adult and immature Culicidae? (10)
- 6.1.4. Is a library being maintained with suitable reference literature? (10)
- 6.2. *Continuing Education*: (40)
- 6.2.1. Are Federal and State sponsored courses attended by program personnel on a regular basis? (20)
- 6.2.2. Are professional and society meetings being attended regularly by personnel? (20)
7. *PUBLIC EDUCATION & PUBLIC RELATIONS*: (100)
- 7.1. *News Media*: (50)
- 7.1.1. Is the mosquito control program being publicized on local television and radio stations? (25)
- 7.1.2. Is newspaper coverage being utilized routinely for releases and feature articles? (25)
- 7.2. *Group Contact*: (25)
- 7.2.1. Is there liaison between program officials and civic or neighborhood organizations? (10)

- 7.2.2. Are schools and institutions visited periodically? (5)
- 7.2.3. Are displays being exhibited (at farm shows, fairs, etc.)? (10)
- 7.3. *Literature*: (25)
- 7.3.1. Are pamphlets or other educational literature effectively distributed? (20)
- 7.3.2. Are pertinent program activities and results being published in scientific journals? (5)
8. INTER-GOVERNMENTAL COORDINATION: (50)
- 8.1. *Liaison*: Are local and municipal governments solicited for cooperation and invited to participate in technical assistance programs?
- 8.2. *Training Program*: Is there a formal training program conducted for personnel from townships and municipalities involved in local mosquito control? (10)
- 8.3. *Information Services*: Are mosquito survey data made available to the municipalities involved in local control? (10)
- 8.4. *Recommendations*: Are recommendations made for the permanent elimination of local mosquito breeding areas? (10)
9. REPORTS: (50)
- 9.1. *Quarterly Reports*. Are progress reports prepared on a quarterly basis? (20)
- 9.2. *Annual Report*. Is an annual report prepared which clearly summarizes control activities, overall effectiveness of the control program, and recommendations for improvement? (25)
- 9.3. *Distribution*. Are the reports properly distributed? (5)

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ENTOMOLOGIST

The South Cook County Mosquito Abatement District desires to hire an Entomologist, experienced in operational activities of a mosquito abatement district. Person desired should have a Master's or Doctor's Degree in Entomology.

This District covers 340 square miles and practices, primarily, a larviciding program. Responsibility will include: technical adviser to General Manager, operations of laboratory for larval and adult identification, research, pesticide evaluation, adviser for methods of operation, personnel training and administration of laboratory. The Entomologist will have total responsibility for the technical operation of the District. *Excellent fringe benefits.*

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