

**ENVIRONMENTAL PROTECTION AGENCY'S PESTICIDE ENVIRONMENTAL
STEWARDSHIP PROGRAM**

**UNDER THE AUSPICES OF AMERICAN MOSQUITO CONTROL
ASSOCIATION**

"PARTNERSHIP STRATEGY DOCUMENT"

for the NEW JERSEY MOSQUITO CONTROL ASSOCIATION, INC.

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**I. INTRODUCTION TO THE NEW JERSEY MOSQUITO CONTROL ASSOCIATION
STRATEGY DOCUMENT**

This "Partnership Strategy Document" (PSD) for the Pesticide Environmental Stewardship Program (PESP) has been developed by the New Jersey Mosquito Control Association (NJMCA), a sustaining member organization and affiliate of the American Mosquito Control Association (AMCA).

Chapter VII of the AMCA PSD provides for qualified member organizations to attain PESP partnership status under the auspices of AMCA. NJMCA is the oldest ongoing professional association of mosquito control workers in the United States and heartily endorses the concept of a PESP. This document and accompanying appendices describe the current status of mosquito control activities in New Jersey. The document also details our use of an Integrated Pest Management (IPM) approach to controlling mosquitoes that is consistent with the goals of the PESP.

We, the members of NJMCA, have been stewards of the environment for more than 8 decades. This platform gives us an opportunity to tell our story, establish goals for the future and create parameters for measuring achievable PESP milestones.

II. OVERVIEW OF THE NEW JERSEY MOSQUITO CONTROL ASSOCIATION

New Jersey has a diverse ecology that provides habitat for more than 60 species of mosquitoes. New Jersey also has more human residents per square mile than any other state. At the turn of this century, New Jersey functioned as the center for mosquito research and those early workers developed many of the basic concepts used in mosquito control today. Their successes allowed creation of organized, multidiscipline mosquito control as a proper function of government. Information sharing among researchers and control workers was recognized as an important component of responsible mosquito management and was formalized by the creation of the NJMCA in 1914.

The objectives and purposes of NJMCA are to:

- Promote and encourage close cooperation among those directly and indirectly concerned with, or interested in, mosquito control and related work.
- Stimulate educational activities to increase the knowledge of mosquito control.
- Advance the cause of mosquito control and related environmental concerns in New Jersey and elsewhere.
- Encourage such other insect control programs as the association may determine.
- Through its annual meetings and written proceedings, thereof, report and record safe, effective and environmentally sound mosquito control activities performed to protect the health and welfare of the citizens of New Jersey.

These goals stem from the philosophy of NJMCA members to target mosquitoes and/or their habitat as specifically as possible in a financially efficient manner. Minimizing pesticide impact on non-target organisms has always been vital to public acceptance and was incorporated into the goals of NJMCA when the association was originally formed. The nature of the pesticides used at that time was understood and the need to protect workers and farm animals was clear. The present day need to be species specific in the selection and application of pesticides is fundamental to the methodologies we use in New Jersey.

The sanitation and habitat modification procedures developed or enhanced by the early mosquito control workers in New Jersey form the foundation for today's source reduction activities. The water management techniques pioneered by New Jersey's early workers have been honed into the most efficient long term methods available today to reduce mosquito production. Enhancement of natural predators was deemed important in the early days of mosquito control and is now an accepted component of New Jersey's program that is funded and coordinated by our state agencies.

Surveillance is one of the best tools we have for focusing mosquito control on specific pest and vector species. Sampling and identification allow problem species to be recognized and targeted for control. Early mosquito control workers in New Jersey benefited greatly from the landmark investigations of John B. Smith, legendary taxonomist and founder of organized mosquito control. Surveillance programs to monitor disease organisms in their mosquito vectors were not available to early workers but are fundamental to New Jersey's programs today. In New Jersey, the need for control, type of management employed or alternatives to pesticides are all weighed against the surveillance data we collect.

The history of mosquito control in New Jersey shows long standing environmental awareness and the ability to select pesticides, only when necessary, from the broad array of techniques we have at our disposal. New Jersey is an advocate of environmental stewardship and the objectives of NJMCA have long been consistent with those of the PESP.

III. NEW JERSEY'S CONCEPT OF A RESPONSIBLE MOSQUITO CONTROL PROGRAM.

Mosquito control in the state of New Jersey is mandated by law under Title 26, Chapters 3 & 9 of the NJ Health Statutes. The details of the laws we follow today were written by Dr. John B. Smith in the early 1900's. Dr. Smith was an accomplished entomologist and a lawyer. His visions produced the concepts for organizing and mandating mosquito control under the NJ state health statutes.

Title 26 assigns the control of pest and vector species to county mosquito control commissions which function as autonomous units of county government. Activities and expenditure of funds are overseen by a body of commissioners appointed by the board of

chosen freeholders in each county. Tax levies provide the operational budget on a county by county basis. Autonomous mosquito commissions have the powers of a local board of health regarding mosquitoes including right of entry onto public and private properties. They have the power to make a declaration regarding mosquito nuisance and can issue an abatement notice whenever necessary. Nine New Jersey counties currently maintain autonomous commissions and 11 counties have mosquito control responsibilities assigned to other agencies of county government.

The laws enacted by Title 26 mandate the Director of the NJ Agricultural Experiment Station (NJAES) at Rutgers University to function in an advisory capacity to all mosquito control agencies in the state. Specific duties of the Director include: 1) annual review of mosquito commission plans & estimates, 2) conducting surveys for county agencies upon request, 3) investigating the life histories of individual species, 4) recommending methods for control, and 5) conducting extension related activities that educate the public and advocate responsible mosquito control. A primary objective of NJAES involvement in Title 26 is to maintain professionalism within the mosquito control community in New Jersey that is consistent with current environmental concerns.

Title 26 also provides for a State Mosquito Control Commission (SMCC) that functions in an advisory capacity to the Governor. Composition of the SMCC includes 6 public members appointed by the Governor and representatives from the New Jersey Department of Environmental Protection (NJDEP), the NJ Department of Health and Senior Services (NJDHSS), the NJ Department of Agriculture (NJDA) and the NJAES. The SMCC is mandated to carry on a continuous study of mosquito control operations in the state, recommend amounts of money deemed necessary for mosquito control purposes and allocate state aid to counties from an annual appropriation. The Office of Mosquito Control Coordination (OMCC), within the NJDEP, administers SMCC funding and expedites operational programs advocated by that body. Representation by the above mentioned departments of state government on the SMCC fosters a network of communication that recognizes the interdepartmental nature of mosquito control problems and activities in the state.

The operational aspects of mosquito control in New Jersey are conducted by the autonomous mosquito control commissions described above, mosquito control agencies within other county departments as well as federal, municipal and private mosquito control programs. Regardless of the agency, the NJMCA advocates the following as necessary components of responsible programs.

- A. **SURVEILLANCE.** NJMCA believes that mosquito control begins with a surveillance program that targets pest and vector species and justifies the need for control. We believe that species specific records should be kept on the composition of mosquito populations prior to enacting control of any kind. We also advocate records on the composition of mosquito populations after management to determine the effectiveness of control operations. The New Jersey light trap was designed as a surveillance tool more than 50 years ago to reach that end. Most mosquito control agencies use light traps in their programs but have additional tools that provide data to guide their activities. The following list of surveillance methodologies are available for utilization by mosquito control agencies in New Jersey.
 1. **LARVAL SURVEILLANCE.** Larval surveillance involves sampling a wide range of aquatic habitats for the presence of pest species during their developmental stages. Most counties have a team of inspectors to collect larval specimens on a regular basis. A mosquito identification specialist normally has the task of identifying the larvae to species. Properly trained mosquito identification

specialists can separate mosquito species that cause nuisance and disease from those that are non-pests or beneficial species. Responsible control programs target pest populations for control and avoid managing habitat that supports benign species.

2. **ADULT SURVEILLANCE.** Adult surveillance measures mosquito populations that have successfully developed and emerged from aquatic habitats. The New Jersey light trap has been the standard for collecting adult mosquitoes and most county agencies operate light traps from early May through October. Portable traps baited with carbon dioxide are useful in areas where electricity is not available. Not all pest species are attracted to light and other forms of adult surveillance are frequently employed. In coastal areas of New Jersey, 1 minute landing rates are used to assess the comparative size of host seeking salt marsh mosquitoes during daylight hours. At inland areas, 10 minute bite counts measure annoyance after dark. Resting boxes are frequently used to measure populations of *Culiseta melanura*, a bird-feeding mosquito that functions in the amplification of eastern equine encephalitis (EEE) virus. Pigeon-baited traps are sometimes employed to measure *Culex* mosquitoes that amplify St. Louis encephalitis virus.
3. **VIRUS SURVEILLANCE.** The New Jersey SMCC funds a virus surveillance program that measures the size of EEE vector populations during the summer season and tests specimens for virus on a weekly basis. Mosquito collections are made at permanent study sites by staff from the NJAES. A wide range of assistance and support is provided by local mosquito control agencies in this effort. Specimens are tested for virus at the NJDHSS laboratories by immunofluorescent antibody (IFA) and polymerase chain reaction (PCR) technology. In addition, one county mosquito control agency runs a sentinel chicken program to identify areas where EEE virus is active and tests mosquitoes for virus by PCR to keep their control activities current. Information on the status of EEE virus is disseminated to all mosquito control agencies in the state in a weekly summary throughout the encephalitis season.

B. SOURCE REDUCTION. Source reduction is the alteration or elimination of mosquito larval habitat. This remains the most effective and economical method of providing long-term mosquito control in New Jersey. Source reduction can include activities as simple as the removal of used tires and the cleaning of rain gutters and bird baths by individual property owners, to extensive regional water management projects conducted by mosquito control agencies on state and/or federal lands. All of these activities eliminate or substantially reduce mosquito breeding and the need for repeated applications of insecticides in the affected habitat. Source reduction activities within New Jersey can be separated into the following two general categories:

1. **SANITATION.** The by-products of the activities of man have been a major contributor to the creation of mosquito breeding habitats. An item as small as a bottle cap or as large as the foundation of a demolished building can serve as a mosquito breeding area. Sanitation is a major part of all IPM programs exemplified by tire removal, de-snagging waterways, catch basin cleaning and container removal.

Mosquito control agencies in New Jersey have statutory police powers that allow for due process and summary abatement of mosquito-related public health nuisances created on both public and private property. The sanitation problems most often resolved by agency inspectors are

problems of ignorance, neglect, oversight or laziness on the part of property owners. Collectively, they result in a major use of agency manpower and resources.

Educational information including videos, slide shows and fact sheets distributed at press briefings, fairs, schools and other public areas have information regarding the importance of sanitation. We must continue to emphasize the role of sanitation as an effective mosquito control modality that is a cost effective, low tech, high result method of preventing disease potential and mosquito interference with our ability to enjoy the outdoors.

1. **WATER MANAGEMENT** - Water management for mosquito control is a form of source reduction that is conducted in fresh and saltwater breeding habitats.

- a. Freshwater Wetlands Management - In 1987 the NJ State Legislature enacted into law the New Jersey Freshwater Wetlands Protection Act (NJSA 13:9b-1 *et seq.*) All ditch maintenance, stream and stormwater basin cleaning and/or restoration activities for mosquito control are now regulated by the NJDEP. *Best Management Practices for Mosquito Control and Freshwater Wetlands Management* (BMP), have been compiled through the cooperative efforts of the mosquito control community, the NJDEP and other state and federal environmental agencies. These practices are applicable to mosquito control activities in stream corridor wetlands, isolated freshwater wetlands, palustrine wooded wetlands, and stormwater facilities. Using mosquito surveillance data and BMP's, New Jersey's mosquito control agencies now conduct water management activities in the state's freshwater wetlands under a number of different "statewide general permits" (i.e. GP-1, GP-7, GP-15) or individual permits when necessitated by the complexity of the project.

In the past, the absence of design and maintenance standards for stormwater management facilities throughout New Jersey resulted in many of the facilities becoming major mosquito producers. In the late 1970's, a 4 year study of stormwater facilities in New Jersey showed that due to poor design, construction and/or lack of maintenance, 67% of all basins surveyed contained mosquito larval habitat with some facilities found to be suitable habitat for up to 8 mosquito species.

In 1989, a stormwater management facilities maintenance manual was produced by NJDEP. The manual is available to all developers, engineers and planning agencies statewide. This document contains specific guidelines and recommendations relative to design, construction and maintenance of stormwater facilities and mosquito control.

- b. Salt Marsh Water Management. Control of the aquatic stage of the mosquitoes that are produced on New Jersey's tidal wetlands requires a complete understanding of tidal marsh ecology. Two water management techniques were developed in New Jersey to control salt marsh mosquito larval populations through the cooperative efforts of county mosquito

control agencies, Rutgers University, the State Division of Fish, Game and Wildlife, the Environmental Protection Agency and the U.S. Army Corps of Engineers. These are Tidal Restoration of Salt Hay Impoundments (TRSHI) and Open Marsh Water Management (OMWM), practices which now serve as models for water management activities world wide.

TRSHI involves the removal and/or modification of ditch plugs and other water control structures to permit daily tidal inundation to occur within salt hay impoundments. Salt hay farming was once a major industry in the Delaware Bay area of New Jersey with over 11,000 acres of salt hay impoundments located within the counties of Cape May and Cumberland. These impoundments created ideal conditions for the production of salt marsh mosquitoes and required repeated applications of insecticides each season to control the larval populations originating within the impounded areas. The daily tidal exchange as a result of TRSHI eliminates mosquito breeding and eventually restores the area to a productive salt marsh. Over 7,500 acres of salt hay impoundments in New Jersey have been restored using TRSHI. Although TRSHI is utilized extensively to control mosquito production in salt hay impoundments, the techniques are also applicable to control mosquito breeding in other impounded marshes.

Open Marsh Water Management was developed in New Jersey in the mid -1960's through the cooperative efforts of mosquito control and wildlife agencies. OMWM standards have been established for use by county mosquito control agencies, which address how and where the technique should be implemented. OMWM is now the major source reduction technique used by coastal mosquito control agencies in New Jersey. OMWM has been found to effectively control mosquito production on salt marshes through a combination of biological control and habitat manipulation. Three basic alterations are employed in OMWM, the construction of: 1) permanent ponds, 2) pond radials and, 3) tidal ditches. The selective excavation of the ponds, pond radials, and ditches eliminate mosquito breeding sites and provide permanent habitat for mosquito-eating killifish. In areas where OMWM is practiced, pesticide applications are substantially reduced.

Presently there is a working agreement in effect with the state, the mosquito control agencies in Atlantic, Ocean, Burlington and Cape May counties, and Region 5 of the U.S. Fish and Wildlife Service which allows the county mosquito control agencies to perform OMWM on the more than 15,000 acres of mosquito breeding salt marshes within the Edwin Forsythe and Cape May National Wildlife Refuges. As a result of county efforts, and support from the state, over 1,500 acres of salt

marsh have been managed on the refuges to date. These lands no longer require larviciding by the counties or state.

C. **CHEMICAL CONTROL.** When source reduction and water management are not feasible, chemicals are judiciously used to control both adult and immature mosquito populations. The chemicals used by New Jersey's mosquito control agencies comply with state and federal requirements, as well as recommendations provided annually by the NJAES. All pesticide applicators and operators in New Jersey are required to be licensed by the NJDEP. Judicious chemical control activities, as part of New Jersey's IPM approach to reducing mosquito populations, uses the most appropriate products available to the professionals of the mosquito control community. Chemical treatments can be directed against either the immature or adult stage of the mosquito life cycle.

1. **Larviciding.** Larviciding, the application of chemicals to kill the immature stages of mosquitoes by ground or aerial treatments, is typically more effective and target specific than focusing on adults. The objective is to target the immature stages at the breeding habitat before populations have had a chance to disperse. New Jersey's IPM approach to mosquito control emphasizes larviciding only when source reduction is not feasible. Applications of larvicides encompass fewer acres than adulticides because treatments are made to relatively small areas where larvae are concentrated as opposed to larger regions where adults have migrated. The larvicides used for mosquito control in New Jersey include: *Bacillus thuringiensis israelensis* and *Bacillus sphaericus* (bacterial larvicides), methoprene (insect growth regulator), temephos (organophosphate), and petroleum oils.
2. **Adulticiding.** Adulticiding is the use of chemicals to reduce adult mosquitoes by ground or aerial applications. Adulticiding is utilized when biting populations reach critical levels. In New Jersey, adulticides are commonly applied as an Ultra-Low Volume (ULV) spray in which the small amounts of active ingredient range from 0.0035 to 0.24 lb/ac. The adulticides are dispensed through properly maintained and calibrated equipment. Adulticides used in New Jersey include pyrethroids and malathion (an organophosphate).
3. **The New Jersey State Airspray Program.** This program was established by state legislation in 1949 to assist coastal counties in the control of salt marsh mosquitoes. This ongoing program is now coordinated through OMCC within the NJDEP. Over the past decade this program has integrated a number of newer management techniques to provide for a more environmentally sound approach to pesticide applications. Emphasis is now focused on larviciding and an increased reliance on biorational pesticides. Many of the changes in the airspray program philosophy have been fostered from relationships cultivated between NJMCA members and federal and state wildlife refuge managers.

D. **BIOLOGICAL CONTROL.** Biological control is the manipulation of natural agents and their by-products to control pest and vector species. Biological control is advantageous because it is generally host-specific with limited non-target effects. In New Jersey, fish are the primary biological control agent used to suppress mosquito populations. Predacious fish, typically *Gambusia* species, are reared and stocked in mosquito breeding habitats.

For many years, individual county mosquito control agencies raised and released their own fish. In 1990, the State of New Jersey established a state-wide mosquitofish program with a specific protocol for use. With annual funding from the SMCC, the program utilizes the existing resources of the Division of Fish,

Game and Wildlife's staff, hatchery and other facilities. While originally designed for *Gambusia affinis*, the program now offers other species for mosquito control including the fathead minnow, the freshwater killifish and two species of sunfish. The use of state resources has expanded the concept of predatory fish for biological mosquito control in New Jersey.

E. EDUCATION

- 1. Continuing Education.** Continuing education is directed toward operational workers to instill or refresh knowledge related to practical mosquito control. Training is primarily in safety, applied technology and requirements for our state's regulated certification program. Examples of continuing education include: the NJMCA Pesticide Training Program, state mandated Right to Know training for hazardous substances, the Northeast Aerial Applicator's Conference, monthly meetings of the Associated Executives of Mosquito Control Work in NJ, the annual meeting of NJMCA and meetings of other mosquito control associations in our geographic area.
- 2. Public Education.** Public education is directed toward the general public to teach mosquito biology and encourage citizens to utilize prevention techniques. Examples include: fact sheets and brochures, classroom lectures at schools, slide shows, films and videos on mosquitoes and their control, and exhibits at fairs. NJMCA regularly interacts with civic leaders, politicians and professionals through the annual conventions of the NJ Educational Association and the NJ League of Municipalities. NJMCA produces and distributes proceedings of its annual meeting and coordinates activities in support of the recently enacted national Mosquito Control Awareness Week. NJMCA believes that public education reduces homeowner pesticide applications and the misuse of non-pesticide toxic materials. Public education encourages support for organized mosquito control rather than crisis management which relies heavily on pesticides.

IV. NJMCA'S SUPPORT OF ENVIRONMENTAL STEWARDSHIP

Over the past 3 decades, the New Jersey mosquito control community has made great strides instituting IPM practices that enhance environmental stewardship. Throughout this period, NJMCA has strongly supported and encouraged these goals. This is evidenced statewide by:

A. SURVEILLANCE

1. NJMCA encourages every mosquito control agency in the state to maintain responsible larval and adult surveillance programs.
2. NJMCA published the results of a symposium on surveillance techniques (*Surveillance Techniques, Uniformity, Consistency and Reliability*) in the 1989 proceedings of its annual meeting. This document is used as a standard for mosquito surveillance in the state.
3. The NJAES offers a graduate level course in "Mosquito Identification and Habitat Recognition" with an examination that leads to NJAES Certification of Mosquito Identification Specialists from county programs. With 63 species of mosquitoes in the state, many of which are of negligible control importance, proper identification skills are critical when assessing the need for control.
4. Since 1975, SMCC has funded a Vector Surveillance Program at the Mosquito Research and Control Unit at Rutgers University to collect and disseminate

information relative to population trends of disease vectors and the status of virus in those vector populations. Coordination of this information with the OMCC, NJDHSS, NJDEP and the county mosquito control agencies allows for proper timing and placement of pesticides.

B. SOURCE REDUCTION.

1. Open Marsh Water Management (OMWM) was developed in New Jersey during the 1960's and has become the nationwide choice for managing mosquito populations in salt marsh habitats. OMWM applied properly to mosquito breeding habitat enhances natural resources, eliminates breeding sites and reduces the need for repeated pesticide applications. New Jersey has written standards for OMWM usage that were published in the 1980 proceedings of its annual meeting (*Standards for Open Marsh Water Management*). Adherence is required by state and federal regulatory agencies to assure that mosquito control projects are properly implemented.
2. NJDEP adopted the "Best Management Practices for Mosquito Control and Freshwater Wetlands Management" in 1989 which standardize work in stream corridors, palustrine wooded wetlands, detention facility wetlands and mitigation wetlands habitats. These practices were developed through the cooperative efforts of New Jersey's OMCC, Division of Fish, Game & Wildlife, Division of Parks and Forests and the federal U.S. Fish & Wildlife Service, U.S Army Corps of Engineers, U.S. Environmental Protection Agency and USDA Natural Resources Conservation Service.

C. CHEMICAL CONTROL.

1. All insecticides used by mosquito control agencies in New Jersey are subject to annual review by NJAES at Rutgers University. Recommendations are published annually based on safety, efficiency and environmental considerations.
2. To apply a pesticide commercially, applicators and operators are required to register and be certified by the NJDEP Pesticide Control Program. They must be further certified in the specific public health category of mosquito control.
3. The efficiency of the adulticiding aspects of the NJ State Airspray Program have been maximized through frequent calibration of equipment. All application sites are monitored before and after treatment to ensure proper placement and control.

D. BIOLOGICAL CONTROL.

1. New Jersey's mosquitofish program represents a cooperative effort between state and county agencies to enhance environmental stewardship by reducing reliance on pesticides in mosquito breeding habitats.

E. EDUCATION.

1. NJMCA and NJDEP cooperatively provide annual training sessions to convey pertinent information to those involved in mosquito surveillance and control. Many of the training sessions provide recertification credits to attendees to comply with published NJDEP criteria.

2. NJMCA is developing a program at the elementary school level explaining the basics of mosquito biology and control to promote the importance of mosquitoes as a public health hazard.

F. COOPERATION WITH GOVERNMENT & PRIVATE ENTERPRISE.

1. NJMCA recognized the need for responsible environmental stewardship and participated in the development of OMWM Standards and Freshwater Wetlands Management Practices. In addition, NJMCA and its members helped develop standards adopted by NJDEP for Stormwater Management in the New Jersey Coastal Zone.
2. NJ county mosquito control agencies routinely work with municipalities and the private sector to eliminate breeding sites created by improper storage of tires, illegal dumping and poor drainage. Through these efforts, thousands of sites once subjected to repeated pesticide applications have been eliminated.
3. NJMCA member agencies are participants in the Public Service Electric and Gas consortium that is actively converting thousands of acres of mosquito breeding salt hay farms to tidal salt marsh along the shore of Delaware Bay. The restoration of these wetlands will result in substantial reduction in pesticide usage.
4. NJMCA members have worked with U.S. Fish and Wildlife Service, Region 5, to secure a 5 year agreement that allows surveillance and control work on the Edwin B. Forsythe National Wildlife Refuge. This memorandum of understanding permits mosquito control agencies to conduct OMWM and insecticide applications on refuge properties.
5. The OMCC has brokered Agreements of Entry and a Memorandum of Agreement with the Army Corps of Engineers that allows for proper surveillance and treatment of Corps dredge spoil sites. This allows for professionally timed applications and work performed by the state is reimbursable.

V. MEASURING PROGRESS IN MEETING PESP/AMCA GOALS

The NJMCA established an *ad hoc* committee in 1997 to investigate the feasibility of becoming a subpartner of the AMCA in the PESP initiative of the AMCA. To that end, the committee agreed to proceed and it was decided the goals of the NJMCA are consistent with those of the PESP. The formal submission of this document is a result of an endorsement by the Trustees of the NJMCA. Upon acceptance of this document by AMCA, our first goal in 1998 will be to educate the membership of the NJMCA to the content of this strategy document and goals of PESP. This goal will be accomplished by presenting this strategy document to the NJMCA membership at the 1998 annual meeting and other appropriate training sessions. The *ad hoc* committee recommends that the NJMCA establish a standing committee to continue education of its membership and develop a method of measuring the goals presented in this document on an annual basis.

LIST OF APPENDICES

- New Jersey Statutes Annotated: Title 26 (Health & Vital Statistics) Chapters 3 & 9.
- Surveillance Techniques: Uniformity, Consistency and Reliability. Papers from a Symposium published in the Proceedings of the New Jersey Mosquito Control Association, 1989.
- Best Management Practices for Mosquito Control and Freshwater Wetlands Management. New Jersey Department of Environmental Protection Document, Last Revised 1997, 44pp. (Cited in N.J.A.C. 7:A-1.4)

- Standards for Open Marsh Water Management (OMWM). Published in the Proceedings of the New Jersey Mosquito Control Association, 1980.
- Working Agreement for Saltmarsh Mosquito Control in Ocean, Burlington, Atlantic and Cape May Counties Between Office of Mosquito Control Coordination, New Jersey Department of Environmental Protection and Energy and Region 5 U.S. Fish and Wildlife Service. Memorandum of Agreement, July, 1994.
- Insecticides for Mosquito Control in New Jersey. New Jersey Agricultural Experiment Station Publication, Revised Annually, 14 pp.
- How to Use the State Bio-control (Mosquitofish) Program for Mosquito Control in New Jersey. NJDEP Bulletin, 1992, 10 pp.
- Mosquitofish Fact Sheet. NJDEP Fact Sheet, 1994.
- New Jersey Agricultural Experiment Station Fact Sheets
- [*Why Mosquitoes Cannot Transmit Aids* FS736](#)
- [*Questions Regarding Eastern Equine Encephalitis and Horses* FS737](#)
- [*Controlling Mosquitoes Around the Home* FS780](#)
- [*The Asian Tiger Mosquito in New Jersey* FS845](#)
- [*Products and Promotions of Limited Value for Mosquito Control* FS867](#)
- Stormwater and Nonpoint Source Pollution Control, Best Management Practices Manual. NJDEP/NJDA Document, 1994, 188 pp.
- Memorandum of Agreement with U.S. Army Corps of Engineers. 1990, 99 pp.
- NJDEP Flood Hazard Area Control Act Rules (NJAC 7:13-1.1 et seq.) 1995.
- New Jersey Mosquitoes-Biology and Control Web Page. Accessible through <www-rci.rutgers.edu/~insects/njmos.htm>