

New Jersey Mosquito Control Association, Inc Newsletter Vol. 7 No 1 April 1995

Message From The President

Egg, larva, pupa, adult - the four stages in the development of the mosquito. Collectively, these stages are referred to as metamorphosis, or more accurately, complex metamorphosis. We use words like larva and pupa regularly - we collect, identify, rear, survey, and kill them - but what do they mean?

One of the great entomologists of our time, Robert E. Snodgrass, was working on an encyclopedia of insect anatomy at the time of his death in 1962. Included in the work he had finished were the origins of words that we, as members of the New Jersey Mosquito Control Association (NJMCA), use nearly every day to describe and explain what we do for a living.

Take the word "larva" for instance. Its Latin derivation means a specter, a ghost, a hobgoblin, or a mask. Snodgrass felt that the last meaning, a mask, was particularly appropriate. This is understandable: consider how differently the larval stage of the mosquito looks in comparison to the finished product!

How about "metamorphosis"? This is a word derived from the Greek: *meta* "a change" + *morphe* "form" + *osis* "a process of." Literally translated, metamorphosis is "a process of changing form." The process of change can be fairly rapid, as is the case with many mosquito species during the hot summer months that complete development in less than a week. Development can also be more prolonged. Look at the cattail mosquito, *Coquillettidia perturbans*, where nearly a year is required to go from egg to adult (and then there's the 17-year cicada!).

The form of our Association has changed over the years. When first conceived in 1914, we were the N.J. Mosquito Extermination Association: sixty years later we had incorporated and changed our name. In 1912, as per Title 26 we all were Mosquito Control Commissions: today we are Divisions, Departments, Units, and yes, Commissions. Forms change, but the goals of our Association remain.

By Laws: Article II Objectives, Section 1: The objectives and purpose of the association shall be to promote and encourage close cooperation among those directly and indirectly concerned with, or interested in, mosquito control and related work, the stimulation of educational activities to increase the knowledge of mosquito control and the advancement of the cause of mosquito control and related environmental concerns in the state of New

Jersey and elsewhere. The association may also encourage such other insect control programs as the association of board of trustees may determine.

The overwhelming success of the past several Annual Meetings are indicative of the cooperative abilities of our membership. This years "Tool of the Trade" session provided s unique forum for some of our operational people to display their ingenuity - what a great way to wrap up!

We've been around as an association now for 81 years. I have no doubt that, in one "form" or another, we'll be around for at least 81 more. The NJMCA is a reflection of its membership, or more accurately, its *active membership*. If you are interested in the continuing development of the NJMCA, please become or remain, an active member.

James R. McNelly, Cape May County

NEWS FROM THE 82ND ANNUAL MEETING OF THE NJMCA, INC.

Election Results

At the business meeting of the 82nd Annual Meeting of the NJMCA, Inc. held at the Trump Plaza Hotel & Casino in Atlantic City, NJ on March 8, 1995, the following were elected as the officers of the Association: President, **James McNelly** (Cape May County MEC), 1st Vice-President, **Dr. Thomas Murray** (Camden County MEC), 2nd Vice-President, **Chester Stacheki** (Delaware Div. F & W), Secretary, **Bunnie Hajek** (Rutgers MR&C, ret.), Treasurer, **Christine Musa** (Warren County MEC).

The following trustees were elected as Trustee Representatives to the NJMCA, Inc.: **Dr. Wayne Crans** (Rutgers MR&C), **Dr. Marc Slaff** (Morris County MEC), and **Martin Chomsky** (Monmouth County MEC).

A By-Laws change at this meeting created five At-Large positions on the NJMCA, Inc. board of Trustees. The following were elected as At-Large members of the Board of Trustees: **Claudia O'Malley** (Burlington County MEC), **William Zawicki** (Northeast Vector Mgt.), **Roderick Schmidt** (Middlesex County MEC), **Richard Candeletti** (Ocean County MEC), and **Fred Ferrigno** ((Cape May County MEC).

New "Honorary Member"

A.R. (Bunnie) Hajek, retired from the Mosquito Research and Control Unit of Rutgers University for several years now, continues to devote many hours to the NJMCA, Inc. both as Secretary and serving on committees. Bunnie was honored at the Annual Meeting by being elected as an "Honorary Member" of the NJMCA, Inc., only the third such member in the history of the Association.

Twenty-Five Years

The Association's Twenty-five Year Service award was presented to **Alan Juszcyk**, Superintendent of the Division of Mosquito Extermination in Passaic County, **Michael Sawka, Jr.**, Commissioner on the Morris County Mosquito Commission, and **Bryant Stanley**, Senior Inspector of the Monmouth County Mosquito Commission.

Continuing Education

Dr. Wayne Crans presented a certificate to **Pat Conover** (Cape May County MEC) for the "Completion Of A Competency Examination In Mosquito Identification And Habitat Recognition," a training program developed by Dr. Crans and sponsored by the Rutgers's Cook College Office of Continuing Education.

Jessie B. Leslie Award

Howard Emerson presented the Jessie B. Leslie Award, an award from the Associated Executives of Mosquito Control Work in New Jersey, to **Dr. Donald J. Sutherland**, recently retired from Rutgers University, Mosquito Research and Control. Dr. Sutherland was nominated for his numerous contributions to mosquito control over the years as well as for his continuing contribution by publishing "Insecticides for Mosquito Control in New Jersey" for the NJ Agricultural Experiment Station.

Photo Salon

For 1995, the Projection Committee took the reigns of the Photo Salon from the Program Committee. The only change made was to create a plaque as the prize for the "Best in Show" winner. In addition, a copy of the winning entry will be included for use in the state display.

We received a total of 36 entries for the Photo Salon. The "General" category was still the most popular; however, the "Mosquito Biology/Habitat" category had twice as many entries as last year. Unfortunately, the "Water Management" category has only a couple of entries - think Water Management for 96!

This year's "Best in Show" went to Jim McNelly (Cape May Co.) and Dr. Wayne Crans (NJAES) for their entry in the Humorous category. Entitled "A Bouquet of Snowys," the slide showed the contrast between marked and unmarked Snowy Egrets that were used during a study of wading birds as reservoirs of EEE virus.

The other category winners were Chris Frame (Cape May Co.) in Mosquito Biology/Habitat, Leita Hulmes (Monmouth Co.) in Water Management, Wally Terrill (Northeast Vector Mgt.) in Chemical/Biological Control, and Leita Hulmes (Monmouth Co.) in the General category. Our thanks to all entrants.

Many thanks to the judges: Dana Chort (Atlantic Co.), Bob Duryea (Warren Co.), and Bob Kent (NJ Office of Mosquito Control Coor.).

Additional thanks to Farida Mahmood (Rutgers) for providing the slides and Dana Chort for his projection expertise.

Michael Romanowski, Ocean County MEC

? Questions Answered ?

Submit questions to the editor or to a NEWSLETTER committee member on any aspect of mosquitoes or their control and the question will be referred to an "expert" in that particular area for an answer.

Question: Why do light trap collections of one mosquito species sometimes contain a few small individuals mixed in with those we would consider to be of normal size? *Submitted by Mike Romanowski, Ocean County MEC*

Answer: The size of an adult mosquito is directly related to the conditions it was subjected to during its larval development. There are three main factors that influence size:

1. **Food Resources** - Larvae that have an abundance of food during their development from 1st to 4th instar become significantly larger adults than larvae that have more limited food resource.
2. **Temperature** - Larvae that develop in colder water produce larger adults than larvae which experience accelerated growth due to warmer habitat water. This is particularly evident in multivoltine species that overwinter in the larval stage. The overwintering cohort of adults that appears in the spring is always significantly larger than the summer cohorts that follow.
3. **Larval Density** - Larvae that are crowded during their development period become stunted and emerge as smaller adults than larvae reared at lower densities. That is, in part, due to food resources but research has shown that crowding with an unlimited food supply also has a negative effect on the growth curve.

Light trap collections that contain adults of mixed size usually indicate an age distribution within the sample. Some of the specimens emerge from larvae that were subject to high temperatures, limited food or crowding. Others developed under conditions that were conducive to maximum growth. *Answered by: Cr. Wayne Crans, Mosquito Research and Control, Rutgers University*

UPCOMING MEETINGS, TRAINING AND SEMINARS

Professional Meetings

Society of Vector Ecology, October 8-11, 1995, Fort Collins, Colorado

Penns. Mosquito and Vector Control Association, October 11-13, 1995, Location TBA

Northeast Mosquito Control Assoc., November 13-15, 1995, Cape Cod, Mass.

New Jersey Mosquito Control Assoc., March 5-8, 1996, Atlantic City, NJ

American Mosquito Control Assoc., March 24-28, 1996, Norfolk, VA

Dept. of Entomology Seminars, Rutgers University

April 14 - Shirley Luckhart, Ph.D. candidate, Ent. Dept., Rutgers University
"Suppression of Cellular Encapsulation in *Heliothis virescens* Parasitized by *Campoletis sonorensis*: Genetic and Temporal Partitioning by Wasp and Viral Gene Products"

April 28 - Dr. Donald J. Probst, Ext. Specialist., NJAES, Rutgers University "Vegetable Integrated Pest Management Program: Working Towards Agricultural Sustainability"

Cook College - Office of Cont. Ed.

Wetlands Mgt. short course series offered in spring-summer 1995, from "Wetland Delineation Certification" to "Hydrology of Wetlands". Cal (908) 932-9271 for further info.

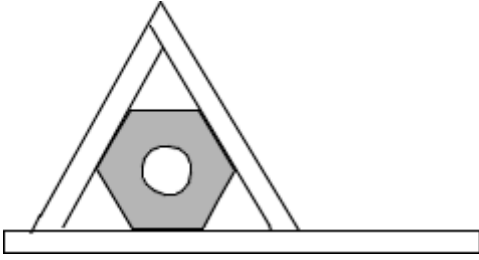
SURVEILLANCE TECHNIQUES

[Guidelines for Larval Surveillance](#)

Tips and Techniques

This is a continuation of Rick Candeletti's "Tools of the Trade" symposium which was so successful at NJMCA, Inc. Annual Meeting held this past March in Atlantic City, NJ. We hope this will be a continuing column where time, money, and effort saving ideas can be shared. Please submit your ideas to the editor as you think of them.

- Large and usually expensive wrenches can be cheaply fabricated with only basic metal fabricating abilities. Instead of purchasing expensive open-end or socket wrenches, three pieces of flat metal can be cut and welded together to grasp a hex nut at three of its six points. The fabricated tool can then be turned by using a large pipe for leverage.



Rich Candeletti, Assist. Superint., Ocean County Mosquito Comm.

- When inspecting along wooded roads, it is useful to tie a short piece of survey tape to a branch to aid in spotting the exact location in the future. Blue tape is a good choice as it is less conspicuous than a brighter color, yet it is still clearly visible.

- Since dippers get stained quickly, the frequent use of scouring pads makes viewing samples easier.

David B. Kellum, Inspector, Atlantic County Mosquito Control

- Tips for Successful *Gambusia* Stocking

1. Acclimate the fish - there should be no more than a 5 degree difference in temperature between the water the fish are transported in and the habitat in which they're being placed.
2. The areas being stocked should actually be the site of mosquito production, and not just 'look like a good spot for fish'.
3. If you want to build a good sized population, aquatic vegetation (around the margins of the sticking site and/or within the site) is necessary - provides cover for the fry.

Claudia O'Malley, Entomologist, Burlington County Mosquito Comm.

New Officers of Assoc. Execs.

At the January meeting of the Associated Executives of Mosquito Control Work in New Jersey, the following were elected and assumed their roles as new officers of that association: President, **Wayne J. Crans** (Rutgers MR&C), Vice-President, **Christine Musa** (Warren County MEC), Treasurer, **Scott Crans** (Sussex County MEC), and Secretary **Claudia O'Malley** (Burlington County MEC).

Good News

The Pesticide Committee of the Associated Executives of Mosquito Control Work in New Jersey has contracted the NJDEP about updating the category 8B (mosquito control) manual and exam. The DEP gladly accepted the offer of the Pesticide Committee to do this. We are very happy for their cooperation and the final product will be available as soon as possible.

Pesticide Committee, Roderick Schmidt, Chairman

Beaver Problems?

At the NJMCA meeting in March a presentation was given on beaver control by Bob Eriksen from the Wildlife Damage Control Unit of the NJDEP Division of Fish, Game and Wildlife. The following telephone numbers were given to contact a wildlife control representative if anyone is experiencing problems with beaver: Montage 201-293-7142, Clinton 908-735-8793, Assunpink 609-259-7955, New Egypt 609-758-7280, Winslow 609-629-7224.

Research and Development

During 1994 the NJMCA, Inc. research and Development Committee reissued a 1988 questionnaire on research needs in the State of New Jersey. This questionnaire was kept identical to the 1988 questionnaire so the results could be directly compared.

The top five research need areas compare favorably with the 1988 survey with the exceptions of non-target/endangered species studies which jumped from 9th in 1988 to 4th in 1994.

Water management and its impact in freshwater wetlands remains the number 1 research need area as reported by the New Jersey mosquito control community.

Following are your rankings of research needs in 1994 and 1988, with the lowest number having the highest priority:

1988 1994

__1__ __1__ Water Mgt., impact of BMP on FW wetlands

__2__ __6__ Bti and oil mix as larvicides

3 2 Bti, consistency of performance

4 3 Newer biological control agents

5 9 B. sphaericus

6 8 Permethrin as a residual adulticide

7 5 Abate (resistance, non-targets)

8 10 Golden Bear oil, phytotoxicity

9 4 Non-target studies, end. species

10 11 Genetic control of mosquitoes

12 12 Dibrom ground ULV, premix

Research and Development Committee, Robert Duryea, Chairman

SOVE

The Society for Vector Ecology is an international organization of professional entomologists, biologists, and others whose interests include biology, ecology, research, prevention, and management of insects and other arthropods and organisms of public health importance. The Society holds an Annual Conference in the Continental U.S., regional meetings, and a European Region Conference annually for the purpose of sharing information among its membership. For further info contact: **Justine Keller**, Executive Secretary, Society for Vector Ecology, P.O. Box 87, Santa Ana, California, 92702 Phone: (714) 971-2421, Fax (714) 971-3940.

State Mosquito Control Commission Update

The State Mosquito Control Commission remains well and alive in spite of continuing budgetary constraints. Thanks to the commission, and capital funds appropriated to it during the current fiscal year, the Atlantic and Salem County mosquito control agencies will now be the recipients of two new major pieces of water management equipment.

The Atlantic County Mosquito Control Unit will soon receive a new amphibious rotary ditcher. The machine is currently being built and will be assigned to Bill Reinert's unit, and be in full operation on the Edwin B. Forsythe National Wildlife Refuge Open Marsh Water Management project by early summer.

A second machine, a new long reach hydraulic excavator was delivered to the Salem County Mosquito Control Commission on April 6. Bill Fisher has assured us that the unit will be put to good use as part of the county's water management program.

For All You History Buffs: Did you know that in the thirty-nine years since the State Mosquito Control Commission was established (1956) there have been two hundred thirty-nine business meetings held; a total of 28 individuals have served as public

members on the commission; there have been seven chairmen, two technical advisors and three secretaries.

The commission's current chairman, Aaron Rappaport has the distinction of having held the office the longest; a total of seventeen of his nineteen years as a state commissioner.

The commission's first secretary was Dr. Bailey Pepper. Dr., Pepper served as commission secretary from 1956 until his death in early 1971. His replacement, Dr. Bill Ray Wilson, remained secretary for the next five years. In 1976, Dr. Kenneth Bruder was appointed secretary, a position which he still holds.

Biological Controls: The State Mosquito Control Commission's Biocontrol (mosquitofish) Program enters its fourth year after a very successful 1993 season. Over one hundred thousand fish were stocked last year. One county was actually performing all of their larvicides with fish when all funds for insecticides were depleted by mid summer.

This year the Charles O. Hayford State Fish Hatchery at Hackettstown will again make available an almost unlimited supply of mosquitofish, *Gambusia affinis*. Additionally, this year fishery biologists are recommending the use of three other general larval control agents. The fathead minnow and the blue-gill and pumpkinseed sunfish will be available for some limited stocking on a trial basis. County mosquito control biologists may wish to survey for areas which might be appropriate for stocking these fish instead of *Gambusia*.

The state program will continue to evaluate and consider other species, such as the freshwater killifish, *Fundulus diaphanus*, and stocking strategies to ensure that the biological control program remains versatile, efficient and ecologically beneficial. In addition, behavioral studies regarding the most efficient species for *Coquillettidia* control may be considered.

As part of its commitment to a continuing study of mosquito control, the state commission always considers associated research on the subject of mosquito bio-control agents, their habitat and efficiency.

Dr. Kenneth Bruder and Robert Kent, NJ State Mosquito Control Commission

[Aedes abserratus Species Account](#)

It Is Time For A Heartworm Check!

Dog heartworm is a relatively common infection of canines that have a significant impact on the health and well being of your dog. The causal agent is a large filarial worm that lodges in the chambers of the heart. In heavy infestations, blood flow flushes large

numbers of parasites up the pulmonary artery into the lung. Adult worms can grow to the size of 15 inches prohibiting proper valve closure within the heart and major obstructions within the vessels of the lungs. The infestation is transmitted from dog to dog by mosquitoes but the seasonal cycle of the transmission is poorly understood by most dog owners.

Dogs within an active infected area have adult worms within the heart that produce large numbers of an embryonic form of the parasite known as microfilariae. Microfilariae circulate in the bloodstream but do not grow into adult heartworms within the same host. The microfilariae are a stage in the life cycle of the parasite that requires a mosquito to develop further. All heartworm infections are the result of infected mosquito bites; there are no other routes of transmission for this parasite.

The complete life cycle of the dog heartworm parasite takes approximately one year at our latitude. Mosquitoes that are capable of transmitting the parasite are not on wing until late May or June. *Aedes sollicitans* is a major vector in coastal areas. *Aedes canadensis* and *Aedes triseriatus* appear to be involved throughout the state. Most of the transmissions we experience in New Jersey takes place during the mid-summer months when warm nighttime temperatures accelerate development of the parasite in the adult mosquito. Mosquitoes that feed on an infected dog pick up a number of microfilariae with the bloodmeal. Some of the microfilariae that are imbibed escape from the stomach and use the mosquito as an alternate host in their life cycle. After a 2-3 week period, the parasites reach their infective stage and are ready to be transmitted back to the canine host. The tiny worms invade the head and mouthparts of the mosquito and transfer to their new host when the mosquito is feeding. If an infected mosquito feeds on a dog who is already carrying the parasite, the new infection adds to the worm load of that animal. If an infect mosquito feeds on a dog that is free of the parasite, a new case of dog heartworm is established. Newly acquired worms take approximately 5 months to mature. By the time mosquitoes appear in the spring, last years worms have lodged in the heart and are producing the microfilariae that will lead to new infections.

April is the month to have your dog checked for heartworm because worms acquired last summer will be in the heart producing the microfilariae that your veterinarian uses for diagnostic purposes. If the dog is free of infection, your veterinarian can prescribe preventative measures. If the dog is infected and not treated, it will become a carrier of the parasite. Untreated dogs serve as a source to infect local mosquitoes which, in turn, pass the parasite on to unprotected canines. Untreated dogs also develop excessive parasite loads through re-infection which makes cure difficult if not impossible.

Dr. Wayne J. Crans, Mosquito Research, Rutgers University

Note from the Editor

Comments, suggestions, and articles are welcome and solicited. Please forward any correspondence, including submissions for "Questions Answered," "Tips and Techniques," mailing address corrections, and any other Newsletter correspondence to:

Bill Reinert, Chairman

NJMCA Newsletter

c/o Atlantic County Mosquito Control Unit

PO Box 719

Northfield, NJ 08225

(609) 645-7700, ext. 4417

FAX (609) 645-5873