

NEW JERSEY MOSQUITO CONTROL ASSOCIATION, INC. NEWSLETTER

VOL. X NUMBER 1 June, 1998

Message from the President

To all of my friends and colleagues- I thank you so much for the honor of being chosen NJMCA President this year. Although I am deeply moved by this opportunity, I am also somewhat overwhelmed by the task ahead. During the next year, we will face not only the usual variety of issues that we deal with in NJMCA, but the additional planning required to host the joint AMCA-NJMCA meeting in the year 2000. Preparations are well underway to make the meeting a success, but there is a great deal of work to be done to ensure an enjoyable educational session for everyone. I want mosquito research and control workers from around the globe to look back on the meeting as one of the best that they have ever attended.

By the time you read this, the Executive Committee will have had a meeting to discuss finances, issues surrounding the Proceedings, and the AMCA meeting mentioned above. I plan to convene the Trustees soon to finalize approval of the 1999 meeting facility and to lay out financial plans for the upcoming year. Please let me know of any items you feel deserve attention. I ask for your patience, understanding and help during my term.

There is a situation we face that bears discussion. We are a diverse group, with many bright people who have creative, though divergent, ideas. As with any group, differences of opinion, disagreements and even outright conflicts sometimes occur. As a result, snubs, slights or wounds are inflicted. I implore our members to help reduce the feelings of hostility that have often plagued us in the past. Just because someone does not agree with you does not make that person's view less valid. Discuss the problem openly, then let it go. We have shown repeatedly in the past that the NJMCA can accomplish a great deal when we exhibit teamwork- the success of our displays for National Mosquito Control Awareness Week, our Web page and the EPA Pesticide Environmental Stewardship Program document are just a few NJMCA activities that have garnered favorable national attention recently.

Well, that's enough of the "touchy-feely" stuff from me! What else would you expect from someone who started out in the education field during the late 1960s and early 1970s? Seriously, though, the NJMCA is a good organization- a great organization. Let's continue, together, to build on the successes of the past.

Dr. Marc Slaff, Morris County Mosquito Extermination Commission

NEWS FROM THE 85TH ANNUAL MEETING OF THE NJMCA, Inc.

MANY HONORED AND REMEMBERED AT THE 85th ANNUAL MEETING

As chair of the Awards and Resolutions Committee, I would like to thank the committee members for their participation and a high degree of excellence in assembling this report. Generally the Awards Report is a happy and joyous occasion, not so this year, as we honored three (3) great people, all posthumously. Particularly disturbing (not to detract from the contribution of all these deserving people) was the fact that one life was lost in the performance of regular mosquito control duties during a time that upper management as well as the general population perceives the mosquito control community to be idle, unnecessary or on sabbatical, and that their time could be used more efficiently elsewhere. Not so! It is a known fact "an ounce of prevention is worth a pound of cure". Habitat management is second only in benefit to excellent surveillance. It is ideal mosquito control. No chemicals, environmentally acceptable and no killing or extermination - preservation of the food chain. The down side of habitat management is it is a high-risk procedure for personnel - i.e. operation of equipment in inclement weather, ice, snow, rain mud and working off the beaten path.

In 1979 the Associated Executives of Mosquito Control Work in N.J. awarded the Jessie B. Leslie Award to Bunnie Hajek. In 1989 The NJMCA awarded Bunnie the Association Award for her years of dedicated service and performance. Upon Bunnie's untimely death in 1997, the Board of Trustees of this Association sought another way to honor Bunnie's years of dedicated service. The Trustees recommended and the full membership voted to memorialize Bunnie Hajek through renaming the Association Award "The Bunnie Hajek Award". Many kind words about Bunnie were expressed at the business meeting and during the name change announcement at the Awards Banquet.

The Bunnie Hajek Award, for efforts and contributions beyond that which is expected in the normal performance of their duties, was bestowed on two individuals - sadly both were presented posthumously.

John P. Stubbs worked for the Union County Bureau of Mosquito Control in various capacities with zeal and dedication. He had become qualified as an equipment operator and licensed as a Pesticide Applicator and was a rising star. Ironically, during the winter when many people lose sight of mosquito prevention work, John was killed while operating a piece of heavy equipment on a water management project.

George Conover was the pilot and manager of aircraft operations for the Cape May Mosquito Commission for the last 15 years. George also performed drafting, photographic and maintenance services for the commission with the same willingness and professionalism. George flew not just the mosquito inspection and treatment flights but also carried many researchers and elected officials so that the fine mosquito control work of his Commission was made known far beyond his county. George R. Conover passed away in March 1998.

The Achievement award was given to Noreen Bracy who is about to retire from Burlington County after 39 years.

In addition to the committee's alert for nominations, a request for events to be recorded by resolution was made to the members. All such items were presented to the membership and accepted at the business meeting, as follows:

- Resolution 1. Hildreth M. Fisher remembered as the first Superintendent of Salem County Mosquito Extermination Commission and President of the Associated Executives of Mosquito Control Work in New Jersey.
- Resolution #2. Charlie Mark remembered for helicopter services and innovations in spray technology.
- Resolution #3. Dave Scott remembered for organizational skills and environmental knowledge shared through leadership in the Northeast Mosquito Control Association.
- Resolution #4. Commemoration of the efforts of members, vendors and volunteers in making these meetings a success and in preparing for the year 2000 New Jersey Mosquito Control Association - American Mosquito Control Association joint meetings.

Ten individuals celebrated 25 years in mosquito control with at least part of the service being here in New Jersey:

- William Harris Jr. - Burlington County
- William McCombs - Camden County
- Dr. Thomas Murray - Camden County
- Edward Jefferson - Camden County
- Rod Schmidt - Middlesex County
- Eric Himstedt - Cape May County
- Lawrence Priest - Burlington County
- Brian Gooley - Burlington County
- Stanley Rowe - Burlington County
- Kenneth Bruder - NJDEP

We took this opportunity to distribute awards announced in previous years but not distributed to the recipients. Mr. Hajek has compiled those awards that still require distribution and continues to try to have them delivered to the intended recipient.

ELECTION RESULTS

At the business meeting of the 85th Annual Meeting of the NJMCA, Inc. held at the Bally's Park Place Hotel Casino on April 7, 1998, the following were elected as the officers of the Association: President, Dr. Marc Slaff (Morris County MEC), 1st Vice-President, Judy Hansen (Cape May County Mosquito Control Commission), 2nd Vice

President, Christine Musa (Warren County MEC), Secretary, Dr. Wayne J. Crans (Rutgers MR&C), Treasurer, James R. McNelly Cape May County Mosquito Control Comm.)

The following trustees were elected as at-large trustees to the Executive Committee: Scott Crans (Sussex County Mosquito Control), Alan Juszcyk (Passaic County Mosquito Control), and Tom Candeletti (Ocean County Mosquito Control Commission).

Five regular members were elected to be at-large trustees to the Association: Claudia O'Malley (Burlington County MEC), Bill Zawicki (Northeast Vector Mgt.), Dr. Donald Sutherland (Rutgers MR&C retired), Peter Bosak (Rutgers MR&C), and Robert Kent (NJ Office of Mosquito Control Coord.).

Also Linda Dickson (Warren County MEC) was appointed as the "Proceedings" distribution manager.

1998 JESSE B. LESLIE AWARD

The Jesse B. Leslie award is offered by the Associated Executives of Mosquito Control Work in New Jersey in two separate categories. The first is to be given to an individual within the ranks of mosquito control people who, in the opinion of the Associated Executives, contributed a meritorious service to mosquito control work. The second category is to be given to an individual or an organization who, in the opinion of the Associated Executives, contributed an outstanding service to mosquito control work in New Jersey. This award is limited to persons outside the ranks of the mosquito control fraternity.

In 1998, the award was presented in the second category to Dr. Lisa Reed for her work on the New Jersey Mosquitoes- Biology and Control website. This effort has brought the New Jersey mosquito control community into the forefront of the electronic age.

Dr. Lisa Reed is a Research Assistant in the Rutgers Entomology Department. Her education & professional background is in Ornithology, Behavioral Ecology and Evolution but among her specialized skills is Internet web site development. She is responsible for creating and developing the Entomology Department Web Site that contains the NJ Mosquitoes- Biology and Control web pages.

The NJ Mosquitoes web site has provided a means to readily communicate mosquito related information with other professionals as well as the general public. The site includes profiles of every mosquito research and control agency and association in the state. Mosquito species lists, abstracts, anatomy, habitat and disease information is presented in an attractive and useable form. This web site has been utilized by mosquito control workers to provide information to groups such as environmental commission members, civic organizations etc. which has eliminated the need to provide multiple hard

copies of various fact sheets. This web site was also used recently by teachers for the NJMCA poster contest during National Public Health Week as a substitute for a personal appearance by a mosquito control professional.

Dr. Reed has worked tirelessly at developing the mosquito website including the use of personal time on weekends and evenings to help the mosquito control community achieve its goals. The New Jersey Mosquitoes web site is highly regarded in the country. Both by e-mail and at a recent AMCA meeting the site has received compliments from international representatives. Dr. Reed is solely responsible for entering all the information on the web site. In addition to this, Dr. Reed has continued to keep the information current and added new features to improve the site's usefulness.

The influence of Dr. Reed also includes her participation in extensive sessions at two NJMCA annual meetings to help introduce mosquito professionals to the uses of the computer in their operations. She has also been available to help answer questions that mosquito control workers have regarding computers.

Dr. Reed was presented the Jesse B. Leslie award at the awards banquet of the New Jersey Mosquito Control Association annual meeting on April 8, 1998.

Christine Musa, Warren County MEC

NEW OFFICERS OF ASSOCIATED EXECUTIVES

At the January meeting of the Associated Executives of Mosquito Control Work in New Jersey, the following were elected as officers of that association: President, Christine Musa (Warren County MEC), Vice-President, Scott Crans (Sussex County Div. of Mosquito Control), Treasurer, Wayne Crans (Rutgers Mosq. Research & Control), and Secretary, Roderic Schmidt (Middlesex County MEC).

FAQ's on Mosquitoes

Why do mosquitoes bite?

Mosquitoes belong to a group of insects that requires blood to develop fertile eggs. Males do not lay eggs, thus, male mosquitoes do not bite. The females are the egg producers and "host-seek" for a blood meal. Female mosquitoes lay multiple batches of eggs and require a blood meal for every batch they lay. Few people realize that mosquitoes rely on sugar as their main source of energy. Both male and female mosquitoes feed on plant nectar, fruit juices and liquids that ooze from plants. The sugar is burned as fuel for flight and is replenished on a daily basis. Blood is reserved for egg production and is imbibed less frequently.

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

MOSQUITO FASHION- Golf Shirts Available for Ordering

Check the NJ Mosquitoes website <http://www-rci.rutgers.edu/~insects/mosfash.htm> for New Jersey Mosquito Control Association clothing for sale. Embroidered hats, t-shirts & sweatshirts, tie-tacks and charms can be viewed on the website.

Golf Shirts (short sleeved with collar) are now available! They are 100% cotton pique. The shirts are maroon and have an embroidered logo (New Jersey Mosquito Control Association in white letters with a black and white mosquito) on the left chest. This is the same embroidered logo as on the most recent hats. BUY one and have it to wear at the Teacher's or League of Municipalities Conventions in November to provide a professional, unified look. These shirts are sold for \$26.00 which is our cost. They can be ordered in Large, Extra Large or Double Extra Large. Contact the Warren County Mosquito Commission at (908)453-3585 to place your order.

MEMBERSHIP IN NEW JERSEY MOSQUITO CONTROL ASSOCIATION, Inc.

To apply for membership fill out the following application and forward it to: Secretary, Mosquito Research and Control, Cook College, PO Box 231, New Brunswick, NJ 08903. Make checks payable to "New Jersey Mosquito Control Association", membership period is from March to March.

Name: _____

Individual \$25.00/yr: _____

Sustaining \$250.00/yr: _____

Address: _____ Contribution to D.M. Scholarship:

_____ Phone: Office:() _____ Home:(
) _____

As We Remember...BAILEY B. PEPPER, 1906-1970

Following in the footsteps of J. B. Smith and T. J. Headlee, Bailey B. Pepper became the third full-time head of the Department of Entomology in 1944. Born in South Carolina in

1906, he graduated from Clemson College and earned graduate degrees from Ohio State University (M.S. 1931) and Rutgers University (Ph.D. 1934). He joined the Rutgers faculty in 1935, with responsibility for a research program on vegetable crops, with particular emphasis on sweet corn insect pests. That same year the European corn borer was first detected in Monmouth County; within four years it had spread to other sweet-corn-producing counties. Dr. Pepper's research involved testing sweet corn varieties less susceptible to the pests and insecticides and their applications (nicotine, ryania and eventually DDT in the 1940's).

Dr. Pepper became head of the department at a time of increased research on synthetic insecticides, research spurred by the success of DDT. Insecticide industries established programs to test insecticides with Rutgers and other universities, with all candidate materials coded: e.g. SBP 1382, Bayer 29493; AC 52160. (The common/trade names for these insecticides are given on the last page of this newsletter.) Within two decades scientific reservations about the unintended effects of synthetic insecticides were voiced; actually Dr. Pepper had long supported a balanced management of insect pests using various methods, not only insecticides.

On assuming the duties as department head, Bailey Pepper readily accepted the challenge of mosquito control. He became Secretary of the New Jersey Mosquito Extermination Association (now NJMCA), Secretary of the Associated Executives of Mosquito Control Work in New Jersey, and Secretary of the New Jersey State Mosquito Control Commission on its formation in October 1956. Under his leadership, the number of mosquito control commissions in New Jersey increased to twenty by 1970. Additionally, for twenty-four years he was a commissioner of the Middlesex County Mosquito Extermination Commission. His commitment to these positions is ample testimony to his dedication to mosquito control in New Jersey.

For the department, Dr. Pepper sought to expand its teaching, research and extension activities. He increased graduate student enrollment (as of 1970, 43 students) and diversified the department's research to include structural, household and stored-product insects as well as houseflies, tabanids and other insects affecting humans and animals. Faculty additions also supported research on bird and rodent damage to crops and on nematodes affecting plants and insects. The department's title was changed to Entomology and Economic Zoology in 1965 to better describe its mission.

New Jersey mosquitoes also contributed significantly to the expanded mission of the department. The 1959 outbreak of eastern equine encephalitis (33 cases; 22 deaths) resulted in the construction of the T. J. Headlee Laboratories, and its opening in 1962 brought the addition of new resources to the department. Previously, mosquito research in the department had been confined to one office in Smith Hall for professors Jobbins and Hagmann and a lab vehicle.

In 1968 Dr. Pepper, as president of the Entomological Society of America, led the American delegation to Moscow for the Thirteenth International Congress of Entomology. After the meeting Dr. Pepper and eighteen other entomologists embarked

by plane to Leningrad for a three-day tour of that city. During the flight a passenger with a Geiger counter noted that Dr. Pepper, who had an implant to combat the cancer that ultimately took his life, was radioactive. Dr. Pepper still proudly wore his name tag from the Congress, and, on landing, the passenger reported the radioactivity to the Soviet authorities. During his stay at the Congress in Moscow, Dr. Pepper had consulted with officials of the American Embassy and informed them of the implant. But, just before departure by air from Leningrad to Helsinki, Dr. Pepper was detained by authorities for questioning and examination for over two hours. The other entomologists, concerned about Dr. Pepper's welfare, refused to depart without him and missed their plane to Helsinki. Ultimately Dr. Pepper was released, with repeated apologies by Soviet authorities, and left with his entomological colleagues. Shortly after, the USSR with some of its Warsaw Pact allies, invaded Czechoslovakia to counter the democratization of communism developing in that country.

In 1970 Dr. Pepper announced his intention to retire in July 1971. However, he succumbed to melanoma on December 22, 1970. Only eleven days earlier Rutgers University formally named the department's entomological collection of journals and books the Bailey B. Pepper Entomology Library as part of the university library system. The entrance nameplate, stationery and bookplates all bear the image of the European corn borer.

The Pepper tradition of service to mosquito control has been carried on by his son Jim who has been working at Middlesex County Mosquito Extermination Commission for some thirty-five years. He is currently its supervising heavy equipment operator.

Dr. Donald J. Sutherland, Rutgers MR&C (retired)

***Aedes albopictus* Persists in New Jersey**

In 1995, the Asian Tiger mosquito, *Aedes albopictus*, became established in New Jersey. The first record came from the town of Keyport in Monmouth County where larvae were found in a variety of containers over an area of approximately 1 km. Later that same summer, breeding populations were detected along Delaware Bay in Salem and Cumberland Counties. The following summer, *Ae. albopictus* reappeared in Monmouth and Salem counties, demonstrating that the species was able to survive one of the coldest winters on record for New Jersey. In 1996, populations of *Ae. albopictus* were also detected in Burlington and Atlantic Counties suggesting that range expansion was taking place.

This year, spring sampling revealed that *Ae. albopictus* has again overwintered successfully in New Jersey. Larval populations have been found at 3 of the sites where the species was previously detected. Adults were on the wing and biting at 2 of the sites where larvae were found.

Aedes albopictus was found at Keyport on May 22, 1998 when small numbers of larvae were detected in tires at a local marina. There was no evidence of adults at this site indicating that overwintering eggs were just beginning to hatch in the area. *Aedes triseriatus*, *Aedes atropalpus* and *Culex restuans* were all more abundant than *Ae. albopictus* at the time the collections were made. On May 27, larval sampling at a tire re-capping facility in Pennsville, Salem County, revealed *Ae. albopictus* larvae in many of the tires. Adults were abundant and large numbers swarmed as we approached some of the tire piles. We observed several mating pairs in the vicinity and some of the females attempted to bite. The *Ae. albopictus* larvae at this site were found in pure populations as well as mixed populations with *Culex* spp. No *Ae. triseriatus* or *Ae. atropalpus* were collected from this site.

On May 28, 3rd and 4th instar larvae as well as host-seeking female *Ae. albopictus* were collected from a machinery scrap yard in Hainesport in Burlington County, NJ. The larvae were found in containers that were open enough to admit rainwater, but sheltered from wind and direct sunlight.

The populations observed in Keyport, Pennsville and Hainesport appear to be well established. The Keyport population did not appear to be quite as productive as the populations at the Pennsville and Hainesport sites, but has persisted at that location since its discovery 4 years ago. We expect that *Ae. albopictus* has expanded its range beyond these 3 areas where the species was previously documented. Our surveillance efforts this summer will be directed to define this species' full range in New Jersey.

Jamesina J. Scott, Wayne J. Crans, Rutgers University MR&C

A Tribute To FRANCES G. KILLEEN July 20, 1910 - April 13, 1998

The dictionary defines virtue as "a particular moral excellence" and tells us it comes from the Latin word *virtus*, meaning "strength" or "worth". Virtues come in several different varieties - compassion, friendship, work, loyalty, honesty, and faith. Virtues are the character traits that move us to help family, loved ones, and friends. How do you get these virtues? You practice.

Compassion means thinking less about yourself and more about others. Frances would help "her" employees by balancing their check book, or making sure they had lunch. Nothing was too much trouble.

Friendship does not always require doing what your friends want you to do. Rather, it requires doing what you believe is best for your friend. Frances saw employees come and go, and always with a caring, sincere way, smiling, wishing them well.

Work of one kind or another takes up a greater and greater part of ones life. Life without work makes people feel worthless. Work brings dignity to life. No job was too small or

too large for Frances, and she would tackle everything to the best of her ability, never too busy to stop and help someone in need and always with a smile. Her days were long, 10-12 hours a day and right back on the job the very next morning.

Loyalty is caring in a serious way about family, loved ones, and friends and being willing to show it. Loyalty is looking past your own needs, putting yourself second if necessary, requiring you to do the right thing at the right time for those you care about. Working in our "old building" was certainly a chore and Frances found time to laugh about it even when greeted by skunks and rabbits sitting in our meeting room, or birds flying through the building. It was common to come into our office and find fans running at each end of the building trying to force out the smell. These were great times, but it takes years to realize this fact.

Honesty is more than telling the truth to other people. It means being honest with yourself. It means doing the right thing even when you know no one is looking. "Miss Frances" as she was known in the early years, was hired by the Commission to do the secretarial, administrative and book keeping for the Commission on April 30, 1950. She held this position (47 years) until her retirement on July 1, 1997.

Faith supports all of these virtues, furnishing a text in which the other virtues make sense; confident belief in the truth, value or trust worthiness of a person, an idea, or a thing. Frances experienced much in her life time, never showing weakness. When life was finally comfortable for Frances and her husband, Jack died of cancer. Never complaining, never showing the grief endured, Frances returned to the Commission doing what she enjoyed most, helping people. Frances was truly a woman of virtue.

Hopefully, we have described for others our feelings for our co-worker Frances Killeen. To those of us that knew her, she is truly missed and can never be replaced.

Respectfully, The Cape May County Mosquito Extermination Commission

Have You Ever ?

This is an observation that I may April 29, 1998. I don't think it is that unusual but it is the first time for me. I would like to know how many other people have seen something similar. I had gone to our South Brunswick facility at 6:30 in the morning and it was about 60 degrees. I stopped my vehicle but left it running while I unlocked the gate. When I walked back to my car I noticed what looked like a mosquito. The first adult I had seen this year. Looking more closely I saw what I thought were more mosquitoes. When I walked around to look for more I noticed a swarm of mosquitoes flying around the exhaust of my car, about 20 to 30. Out of curiosity I put my hand into the swarm to see if they would bite. They didn't. I left my hand there and exhaled into the swarm to see if there was any change. Would they land on my hand and bite me? They didn't do either. I caught a few of the mosquitoes. They were *Aedes grossbecki*. To find out how

"attached" to the exhaust they were I turned my car around 180 degrees. When I looked at the exhaust they were still there and they behaved the same way. I guess from what I saw the mosquitoes at that temperature are more attracted to heat than to my hand and/or my breath.

I would be interested in hearing other similar mosquito stories.

Rod Schmidt, Middlesex County MEC

PERSONNEL PROFILE: CURT AND VERN

It's five o'clock in the morning. While many of us are slamming a hand down on the clock radio, or just pouring the first cup of coffee, life is stirring around the hangers at Downtown Airport.

Curt Nixholm and Vern Becker, fixtures at the place since they were children, ready aircraft and insecticides for mosquito control applications which will be applied while even the public who benefit from the work, still may be asleep.

Born in 1961, Curt has been around the airport since he was about 5 or 6 years old. He learned the business from his dad Richard, by watching, following and helping. His education took place literally from the ground up. A college student of aeronautical engineering, he holds Federal Aviation Administration Certification in several Airframe and Power categories. His duties specifically make him responsible for aviation operations for the New Jersey Forest Fire Services Fire Bombing operations and for our Mosquito Control. Curt is the President of the Northeast Agricultural Aviation Association and has been a commissioner on the Pittsgrove Township Fire Department for over 20 years. Curt is married and has three children.

Vern Becker and his wife live in Buena, which is just down the road from the airport. Vern received his bachelors degree in Forestry from Syracuse University. His career at Downtown started as a youth also. Since high school, Vern has gained experience by doing all the hands-on stuff from "swamping" the aircraft, to calibration. This, according to Dick Nixholm, is the best way to learn about the operational end correctly. Vern's responsibilities include supervising the aircraft work for Gypsy Moth control and Cranberry production. A hunting, fishing and scuba enthusiast, Vern reflects the environmental interest and awareness that is so important to all of us. For example, he was appointed to the New Jersey Fish and Game Council in 1991 and continues to serve today.

In fact, one could say that the entire airport has long been an environmental production institution. While about 60% of their work is agricultural, all the rest is dedicated to government work. Established in 1945, they continue to provide service to the environmental protection discipline in the form of aerial survey's for shore birds, beach

grass nourishment; they have participated in the development of Integrated Pest Management strategies and in the research and development of environmentally efficient pesticide calibration and delivery systems and, of course, in mosquito control.

Robert Kent, Office Of Mosquito Control Coordination

NJMCA MOSQUITO POSTER CONTEST

A poster contest was held this year for the first time for students in 3,4,& 5th grades throughout New Jersey to celebrate National Public Health Week and the association with mosquitoes and mosquito control. Entry information was developed for and distributed at the NJ Education Association Meeting (teachers convention) in November 1997.

The following winners were selected and while they are being recognized on a local level, they are being formally presented their savings bonds and ribbons at the statewide Mosquito Week event in Liberty State Park on June 23rd (raindate June 24th) See separate article. Letters were sent out to the participating teachers and students inviting them and their families to the event as well.

Third Grade:

Place Student School Teacher

1st Julie Palmer Belvidere Elementary School, Belvidere Ms. Fahey

2nd James English School #4 Annex, Linden Miss Grieco

3rd Scott Vannatta Belvidere Elementary School, Belvidere Ms. Fahey

HM* Anthony Mele School #4 Annex, Linden Miss Grieco

Fourth Grade:

1st Andrew Arrington Glenwood Avenue School, Wildwood Mrs. Booy

2nd Noelle Fraind Franklin Township School, Washington Mrs. Milson

3rd Katie Wright Hope Township Elementary, Hope Mr. Vliet

4th Holly Righter Glenwood Avenue School, Wildwood Ms. Gale

4th Heather Smith Franklin Township School, Washington Mrs. Beer

* HM- Honorable Mention

A few significant things are to be noted. The teachers expressed a genuine enthusiasm for the topic and said that the students really enjoyed learning about the subject and even started looking into puddles and in tires for larval mosquitoes while outdoors with the class. Perhaps more significant was the fact that several teachers used Rutgers mosquito related fact sheets that were mailed to them (and the school did all the copying), supplemented that information with text book and CD-ROM resources they had available in and/or worked together with the computer teacher to utilize the NJ Mosquitoes web site extensively for the project but did not involve a presentation from a county representative. The posters received from these schools reflected accurate information and demonstrated that there is not a requirement for mosquito personnel to spend time giving presentations at schools to accomplish the educational goals behind this contest. A small amount of time spent sending out a mailing to elementary schools in your area in January can prove to be very successful in terms of public education. Please consider participating next year.

The NJMCA Public Relations Committee, Jim McNelly & Christine Musa, Co-Chairs

Culex restuans Theobald

By: Dr. Wayne J. Crans

- Subgenus : *Culex*
- Type of Life Cycle : *Culex pipiens* Type
- Typical Habitat : Stagnant pools of ground water, artificial containers, breeds in water that ranges from clear to grossly polluted
- Larvae Present : Early spring through late fall
- Head Hairs
- Upper: 4-8 branched
- Lower : 4-8 branched
- Antenna Length: Shorter than head
- Tuft: Multiple, inserted near middle of shaft
- Abdominal Hairs (Segments III-VI) : 1-1-1-1
- Comb Scales : Patch
- Siphon
- Index: 4.0-4.5
- Tufts: Represented by 3 irregularly placed single hairs and one small pair of 2-3 branched subapical tufts
- Pecten: Evenly spaced on basal 1/3 of siphon
- Anal Segment:
- Saddle: Complete ring
- Pre-cratral tufts: None

GEOGRAPHIC DISTRIBUTION: *Culex restuans* has a distribution that ranges from central Canada south into Mexico. The mosquito is very common in the eastern and central United States. Collection records range west into California but its distribution becomes spotty west of the Continental Divide. *Culex restuans* is widespread throughout New Jersey and is considered common in every county of the state.

SEASONAL DISTRIBUTION: *Culex restuans* undergoes a life cycle that is typical for domestic *Culex*. Inseminated adult females enter hibernation in fall and pass the winter in a period of quiescence. Hibernating females of this species are common in basements, spring houses, outbuildings and subterranean enclosures. The females congregate near moisture and move frequently during the winter to remain in a humid atmosphere. Females that survive the winter emerge from hibernation and begin depositing egg rafts during the month of April in southern New Jersey and in May further north. Populations of this mosquito usually peak by July. A second peak is often evident in the fall to produce the adults for the overwintering generation. *Culex restuans* larvae remain in suitable habitats throughout the breeding season, usually mixed with one or more associate species. Larvae often persist in some habitats after females enter hibernation and specimens can often be collected well into October.

LARVAL HABITAT: *Culex restuans* utilizes an exceptionally wide range of larval habitats. The water used by this species can vary from nearly clear to grossly polluted. A partial list of larval habitats includes: temporary ground water, the edge of grassy swampland, sphagnum bogs, road side ditches, tire ruts, hoof prints, discarded buckets, tires, catch basins, sewage effluent and septic seepage. *Culex restuans* regularly colonizes temporary ground pools that remain flooded after they have produced broods of floodwater *Aedes*. In this habitat, the water is generally extremely dark and rank. In May, *Culex restuans* larvae use woodland pools that have produced the spring brood of *Aedes canadensis*. Later in the summer, the species almost always colonizes shaded ground pools that have produced *Ae. trivittatus* and *Psorophora ferox*. *Culex restuans* is also the first species to utilize water that collects in discarded tires. The species can often be found in tire water that is absolutely clear and devoid of leaf litter. In some cases, a thin bloom of algae provides the only nutrient in this tire habitat. In some cases, larvae may also be present in nearby buckets that emanate a rank odor from rotting vegetation that has collected over the years. In habitats that are rich in organic matter, *Cx. restuans* can develop from egg to adult in about 10 days, Complete development can be tripled in water that contains limited organic matter and the adults that emerge may be only half the size.

COMMON ASSOCIATE SPECIES: *Cx. pipiens*, *Cx. salinarius*, *An. punctipennis* *Cs. inornata*, *Ae. canadensis*

LARVAL COLLECTION: No special techniques are required to collect *Cx. restuans*. This species is extremely ubiquitous and can usually be found in significant numbers from early spring through late fall. *Culex restuans* egg rafts will appear in buckets of prepared straw infusions within 24 hrs. Any samples taken from discarded tires are certain to produce representatives of this species in numbers.

LARVAL IDENTIFICATION: *Culex restuans* larvae look very much like *Aedes* in the dipper because of their extremely short antennae and solid body structure. If you draw several specimens into a dropping pipette and examine them from the side, air tube length eliminates most of the *Aedes* sp. as a tentative identification. Under the microscope, the single hairs on the siphon are the easiest character to use for confirmation. *Culex restuans* is the only Culicine in the northeast with single hairs on the air tube. The only larva that shares this characteristic is *Wyeomyia smithii*, a Sabethine that completes its larval life cycle within the leaves of Pitcher Plants. It is advisable to confirm the identification by looking at the head capsule after the air tube has been examined. Most *Culex* sp. have prominent antennae that are constricted toward the tip. *Culex restuans* is the only *Culex* in the northeast with short *Aedes*-like antennae.

REPRESENTATIVE COLLECTION RECORDS

Northern New Jersey:

- Location: Glen Gardner, Hunterdon Co.
- Date: May 10
- Habitat: Wheel Barrow
- Instar: 1st - 4th & Pupae

Southern New Jersey:

- Location: Onga Hat, Burlington Co.
- Date: June 3
- Habitat : Woodland Pool
- Instar: : 1st - 4th & Pupae

IMPORTANCE: There is considerable disagreement in the literature concerning the pest status of *Culex restuans*. Most authors consider the mosquito to be a bird feeder that rarely, if ever, bites humans. Others, however, have described the species as a significant pest with an annoying bite. It is possible that some of the confusion is the result of misidentification of adults in the bite counts. A large proportion of adult female *Cx. restuans* lack the white spots on the thorax that most keys use to separate this species from *Culex pipiens*. Accurate identification requires holding females that have blood fed on humans and allowing them to oviposit. Identification to species would require hatching the egg rafts and looking for larval characteristics. It is just as doubtful that competent culicidologists like Dyar, McLintock and Barr could have misidentified *Cx. pipiens* or *Cx. molestus* as *Cx. restuans*. Under certain circumstances, this mosquito appears to accept humans as a blood meal host to the point where it can function as a pest. In most cases, however, *Cx. restuans* is not attracted to humans and the species is not regarded as a significant nuisance. Eastern equine encephalitis virus (EEEV) is occasionally isolated from *Cx. restuans* at study sites that are monitored for virus activity in New Jersey. It is possible that this species plays a minor role as a secondary vector of EEEV and accelerates transmission among birds during periods of virus amplification.

By: Dr. Wayne J. Crans

MORE DATA, LESS TIME, BETTER DECISIONS? TURN TO G.I.S.

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- Add Tables To The Project
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- Draw Maps Of Your Information

1. To get the most practical information out of this training session, we need your input. This course is being customized to mosquito control needs and we want your ideas for topics to be addressed. For example how to: GPS your existing light trap locations, then link these locations to your current surveillance database. Using this information create a map showing the traps in the county with a suitable buffer, say for the flight range for primary vector species. This buffered area when placed over, say population data would give you a picture/map of where you may need to work during a disease event.

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Express your topics and questions to be covered by the instructors - plus your best dates to:

Camden County Mosquito Commission

(609) 566-2945

E-Mail skeeters@co.camden.nj.us

Answers:

SBP 1382 = resmethrin, Scourge(r)

Bayer 29493 = fenthion, Baytex(r)

AC 52160 = temephos, Abate(r)