Middlesex County Mosquito Extermination Commission
Celebrates 100th Anniversary

The Middlesex County Mosquito Extermination Commission (MCMEC) is celebrating 100 years of service to the community. To celebrate this milestone and to honor the contributions of all its employees, past and present, the Mosquito Commission held a special event on September 17, 2014, at the Dr. Donald J. Sutherland Memorial facility in South Brunswick. The event was attended by about 90 guests including active employees and their families, former employees, commissioners and superintendents, representatives from health departments and county planning board, municipality mayors and department of public works, representatives from Rutgers University, other mosquito control agencies and the State Mosquito Control Commission.

The Commission was appointed by the Hon. James J. Bergen, Justice of the Supreme Court, presiding over the Courts of Middlesex County, by authority of the Act of the Legislature, Section 6, Chapter 104, Laws of 1912. The Commission began its operations on April 1st, 1914, with powers to perform all acts, which in its opinion, may be necessary for the elimination of mosquito breeding areas, or which will tend to exterminate mosquitoes within the county.
The primary mission of the Mosquito Commission is to protect the residents and visitors of the county from nuisance mosquitoes and mosquito-borne diseases like West Nile virus. “The Board of Chosen Freeholders is very grateful to the Mosquito Extermination Commission,” said Freeholder H. James Polos, Chair of the Public Safety and Health Committee. “I know that all residents of Middlesex County, as well as visitors, are thankful for their diligent work. They now have a century-long legacy of protecting us from mosquitoes and mosquito-borne diseases like West Nile virus, and we know this excellence will continue for many years.”

For over 100 years, the MCMEC has served as a part of a statewide organized mosquito control program in partnership with federal, state and local governments and Rutgers University - NJ Agricultural Experiment Station that provides outreach services that promote education on preventing mosquito habitats as well as providing guidance in the proper use of repellents and mosquitocides.

Freeholder Director Ronald G Rios agrees: “The Commission’s success in operation comes from its comprehensive approach. This team employs mosquito management principles in a program that is environmentally sensitive, fiscally prudent and operationally effective for all who work and live in Middlesex County. The Board of Chosen Freeholders is proud to have them working to ensure that our environment is safe and healthy.”
Currently, the Mosquito Commission inspects and treats on a regular basis, over 14,000 mosquito sources as well as aerially treating over 100 upland and marsh areas. Annually, over 28,000 catch basins are treated for mosquito control and in the past decade alone approximately 12,000 scrap tires that breed mosquitoes have been retrieved as part of the Commission's Tire Abatement Program. Throughout the year, the Mosquito Commission has been participating in a series of public outreach events to teach mosquito biology, encourage citizens to utilize prevention techniques, property maintenance for mosquito source reduction and stressing the importance of actions that residents can take to combat mosquito nuisance and mosquito borne diseases.

On this special occasion, the Commission would like to thank and acknowledge the decades of partnership and support from: the Middlesex County Board of Chosen Freeholders, Middlesex County Mosquito Extermination Commission Commissioners, Middlesex County Department of Parks and Recreation, Middlesex County Public Health Department, New Jersey Department of Health and Senior Services, Rutgers University, Department of Entomology-Center for Vector Biology, The New Jersey Agricultural Experimentation Station, The New Jersey State Mosquito Control Commission and Office of Mosquito Control Coordination, Other County Mosquito Control Agencies, Municipal Health Departments, Middlesex County Planning Board and Municipal Departments of Public Works.
2014 Mosquito Control Season Summary
Doug Abdill, Superintendent
Atlantic County Office of Mosquito Control

Most responding counties saw mosquito populations remain low, in 2014. These reduced populations did not result in a reduced virus load in their ranks. Many counties saw increased WNV activity. Many counties are looking forward to new permitting from NJDEP, although there are cost issues which were not anticipated by most. Personnel changes were widespread and all are positive that new faces in new positions will bring good things for the future of mosquito control in New Jersey.

Atlantic County

I will start with the answer to the question posed at the end of the 2013 summary. Yes, we have finally moved out of our temporary home of more than 12 years. We are finally getting comfortable with our new home and are very thankful not to have a perpetual pond under our office.

Despite many hours removing snow during winter of 2013-2014, this year has been a more moderate one, compared to the last few. Our rainfall during most of the season was much closer to average. With this came lower light trap and vector surveillance collections. Our light traps collected only 33,478 female mosquitoes, but our normal species composition is returning. Vector surveillance traps produced 3,896 mosquitoes. Despite this moderate number, our rate of WNV infection skyrocketed from 3 positive pools in 2013 to 19 this year. These mosquitoes were submitted to PHEAL in 199 pools. 42 of these pools were duplexed for EEE and 31 were triplexed for ChikV and DenV. Zero pools were positive for these additional pathogens.

Atlantic County Office of Mosquito Control participated in the state Bio-control Program for the first time in many years. Over 14,000 Gambusia affinis were stocked in a recharge pond that is associated with a Superfund clean-up site and is located on the grounds of the FAA Technical Center at the Atlantic City International Airport. This site had been stocked 15 years ago, but was drained and lost much of the established fish population.
Seven employees attended the NJMCA Convention and Training Session. Doug Abdill presented at the NEAAA Convention. The Office had a presence at four public outreach events this summer.

There were issues commencing water management activities this year. Our hand rail issues were addressed on our County owned amphibious excavator, but other mechanical issues kept us off the marsh. We also took delivery of a new low ground-pressure excavator, which will allow us to get back to addressing habitat issues in upland areas. We will be looking into obtaining a new array of permits for the upcoming year.

Once again, major personnel changes hit us this year. Happily, we added a new inspector, Michael Collela, and brought our inspection crew back to full strength. Supervising Heavy Equipment Operator, Dennis Hill retired after a short return to work and subsequent serious injury. Assistant Superintendent, Dana Chort retired after 25 years of diligent service to the county. His experience is missed and the lack there of makes the job of this superintendent more difficult.

**Cape May County**

Mosquito populations were notably lower as compared to 2013. The 2014 season was drier with a seasonal total monthly average of 0.66” of rainfall, whereas 2013, 3.94”. Various trapping methods combined collected 132,860 female mosquitoes. Of the total, 45.1% were freshwater species and 54.9% brackish/salt marsh species. The 5 most collected species (highest to lowest) from all traps are as follows: *An. bradleyi, Cx. salinarius, Ae. cantator, An. quadrimaculatus and Cq. perturbans*. Our New Jersey light traps collected 110,902 mosquitoes from 27 sites. Twenty six gravid trap locations yielded 15,522 mosquitoes and from 5 resting box sites 4,220. Our CDC and BGS traps are deployed as needed and yielded 2,216 mosquitoes. As a species of interest for our county, *Cx. erraticus* numbers were extremely low at 414 in comparison to the 2013 season collection of 6,890.

Stormy Freese, our new microbiologist, introduced Chikungunya testing to the repertoire of our BSL3 laboratory. In total, we tested 4,010 mosquito pools for WNV, 1,683 for EEE, and 1,075 pools SLE, 275 for LAC and 384 for CHKV. Eight were positive for WNV and 3 for EEE were positive from these collections. Additionally, of the 325 pools sent to the state laboratory 2 tested positive for EEE and none for WNV. Our contract with the State Mosquito Control Commission was renewed to collect, identify, and test *Cs. melano-ura* for EEE, totaling 3,020 mosquitoes from all 4 sites. The Cape May county state resting box site resulted in 5 positive EEE pools. We had no reported human, avian or equine cases of any mosquito borne diseases this season.

Currently we are collecting and testing mosquito samples for, PhD candidate, Tim Kelly from Simon Fraser University whose focus is developing a mathematical model to compare and predict the spread of vector borne diseases in nature. In addition, from these collections, future DNA analysis of blooded mosquitoes will provide much desired information about feeding habits, including *Cx. erraticus*.

Several of our employees attended and participated in the NJMCA conference held in Atlantic City. Dr. Bosak, Edward Sokorai, Chris Frame, Bevin O’Grady, Diane McNelly and Dan Konecny participated in several public events and workshops held within the county including Harborfest, Earth Day, County 4-H Fair, National Night Out, DARE, Pledge 2 Fledge and the Ocean City Air Fest. Our department was presented with a conservation award by the Cape May County Chamber of Commerce for our newly added green roof.

On the water management side, we realized the benefits of the Cox Hall Creek Restoration Project through reduced larvicide applications in 2014. Reductions were due to water management manipulations in 2012 and *Phragmites* control efforts in 2012 and 2013. Our Fishing Creek Pumping Station (a NJ State Mosquito Commission Project in the mid 1960’s) is finally under an engineering study to determine the best course of action for refurbishment and efficiency upgrades. We assisted NJDEP F&W and Conserve Wildlife Foundation of NJ with excavating three vernal pools to expand the range of the Eastern Tiger Salamander.
Cape May Cont’d

A cooperative storm water outfall cleaning effort with our County Road Department and local municipalities is currently underway. We are waiting for our Army Corps of Engineers (Philadelphia District) permit renewal authorizing work in tidal wetlands and federally-regulated freshwater wetlands. An application for a NJDEP Waterfront Development Individual Permit for work in tidal wetlands was submitted November 12th. We are in the process of applying for a NJDEP Freshwater Wetlands General Permit #15 (Mosquito Control) to complement our existing Freshwater Wetlands GP #1 and Flood Hazard Area Individual Permit. We received approval for an 8.5-metric ton amphibious rotary excavator in our 2014 Capital Budget. Bids for the machine will be accepted in mid-December. Edward Sokorai recently took over for Teresa Duckworth (Morris County) as coordinator of the Water Management Network.

On August 25 after a routine morning surveillance one of our helicopters crashed while en route back to our department. Fortunately the pilot and inspector suffered only minor injuries but the helicopter was a complete loss. A thorough onsite inspection did not reveal the cause of the crash but it was likely catastrophic engine failure. We will likely never know because the FAA informed us they did not have enough money in their budget to disassemble the engine. We are exploring different options for our aerial program including an upgrade to one turbine aircraft in place of the two piston powered Hillers we had. In the meantime we will continue to use our remaining Hiller to survey and control mosquitoes.

Exciting endeavors are on our horizon. Renovations, facility wide, have been underway. We are incorporating Google Maps and mobile technology to more efficiently execute and record our spray missions as well as incorporate this information in data analysis. And most profoundly, next year we are anticipating a fall celebration for Cape May County Mosquito Control’s 100th anniversary.

We wish our fellow counties a safe and productive 2015 season.

Cumberland County

For the Cumberland County Mosquito Control Division, the 2014 season began with a large amount of water due to the above average amount of precipitation received during the 2013/2014 winter season. The spring and summer; however, saw a 28% decrease in precipitation as compared to the 2013 season. This resulted in a 7% decrease in service requests from those in 2013.

The light trap season began on May 1st and ended on October 31st, with 15 traps placed throughout the County. Overall, collection numbers decreased by 7% from 2013, with the amount of female mosquitoes totaling 14,783; an average of 5.63 mosquitoes per trap night. This was a small decrease from the previous year’s average of 5.79. The top five mosquito species caught were: *Ae. vexans*, *Cx. restuans*, *Cx. salinarius*, *An. punctipennis*, and *An. bradleyi*

Collections from our resting boxes, CDC traps, and gravid traps commenced the second week of June. An additional resting box site, located in Port Norris, was added during the 2014 season. The resting box sites were sampled once each week, and collections from CDC and gravid traps were made three times per week. A total of 26 different sites were sampled. As of October 10th, 3,528 mosquitoes were submitted to PHEL in 256 pools. Of these, 62 were duplexed for WNV and EEE and six were submitted for Chik/Dengue testing. Cumberland County had two pools test positive for EEE. One was sampled from a resting box and the other from a CDC trap.

The Division did not receive permission to engage in the tire program, so no tires were collected during the winter of 2013/2014. Hopefully, the program can be reinstated this winter.

The Heavy Equipment Operators remained busy in 2014. One water management project was completed on a large ditch network along the bayshore area. Another ditch maintenance project is currently in progress. Unfortunately, two of the Division’s machines went down and are in need of quite extensive repairs, hampering the efforts of the water management crew in completing more projects.

Following a record setting cold winter, we have had a relatively cool summer this year. We performed 3807 inspections yet only 472 of them were service requests from our residents.
Mercer County

Generally August is our busiest month, however we had the lowest number of service requests (83) since 2011 (average of 183.3). We performed only one session of aerial larviciding this year using VectoBac-G. ULV truck mounted adulticiding applications were performed using Scourge, Zenivex E20 and Duet a total of 26 times in order to suppress adult mosquito populations, and for larval control, 856 larvacide applications were conducted.

This year was quiet for West Nile virus (WNV) similar to last year; however we seemed to be one of the counties with the highest MFIR (overall MFIR value of 6.1). We deployed traps (Gravid, EVS, and BGS traps) to 288 locations, twice as many as last year, within the county. Of those trapping efforts, 473 pools were submitted for WNV testing, with 60 testing positive for WNV. We had one WNV positive bird and one human case this year. We submitted 116 *Aedes albopictus* pools for chikungunya and dengue viruses which all returned negative.

We are proud to announce the addition of mosquito colonies to our laboratory this year. Currently we have *Culex pipiens molestus*, *Aedes atropalpus*, and *Toxorhynchites amboinensis*. We were also involved with the use of Auto-dissemination stations for Asian tiger mosquito control with Rutgers University, SpringStar and Hudson County this summer. In addition, we collaborated with Biogents AG and compared the performance of the new generation BGS 2.0 prototypes, to the original BGS traps that are widely in operational use. We deployed different combinations of BGS traps (with and without CO2) in central New Jersey. We have published 8 manuscripts with our collaborators and all these publications are available on our website.

Drs. Unlu and Faraji, and Nick Indelicato presented (5 oral and 3 poster) research findings at the AMCA, NJMCA meetings and the Rutgers University pesticide training session. We participated in several public events and school presentations held including the County 4-H Fair, Touch a Truck day, Master Gardeners, and Valley Forge Community Day.

Middlesex County

The 2014 mosquito season started mild and dry with few heavy rain events in May, the Middlesex County Mosquito Commission was able to inspect and treat a majority of the early season mosquito habitats. The spring season was followed by a cooler and dry summer, with below average temperatures in July and August. Few sporadic rainfall events in summer resulted in multiple broods of mosquitoes in both woodland and floodwater habitats. As the season progressed, weather conditions continued to remain dry and warm throughout the fall mosquito season and as such the county was noted as “abnormally dry” on the US Drought Monitor map. Although there were several rain events at end of mosquito season, none were significant enough to cause major mosquito problems. Most of the temporary control efforts were mainly directed at *Culex* species in permanent stagnant water habitats and at Asian tiger mosquitoes in containers in the later part of the season.

A total of 16,535 female mosquitoes were collected from 17 light traps set over 2,912 trap nights between May and October. For the season, this represents an average of 5.7 mosquitoes per trap night. Heavy rainfall in the spring led to peak light trap collections from late May to June. However, low rainfall in June resulted in declines by early July. Light trap numbers continued to decline as the season progressed. Light traps located in the New York Metro Area collected 9,333 mosquitoes while traps in the Suburban Corridor collected 7,202.

Last but certainly not least, we wish Dr. Ary Faraji all the best as he has moved on from Mercer County to accept a position in Salt Lake City Mosquito Abatement District, Utah. Currently, Dr. Isik Unlu is appointed to the superintendent position. Dr. Faraji has been an extremely valuable asset to the program, and a great mentor for many employees, he will be missed.
Among the total mosquitoes collected, 44.6% were flood water species, 30.2% multivoltine *Culex* spp., 17.7% salt marsh species, 4.7% *Anopheles* species, 2.8% freshwater swamp species, 0.75% container-inhabiting species, and 0.2% early season species. A total of 30 different mosquito species were collected in light traps.

West Nile virus (WNV) surveillance was initiated during the second week of June. Overall, 394 mosquito pools containing 13,661 mosquitoes were submitted for WNV testing. Fifty (50) pools of *Culex* spp, and three pools of *Aedes albopictus* tested positive for WNV. The MFIR for WNV in 2014 was estimated at 3.88. No human or equine cases have been identified, and no birds tested positive for WNV in the County. Eight travel-associated human cases of chikungunya Virus (ChikV) were detected in individuals returning from the Dominican Republic or Haiti. Sixty-six pools of *Aedes albopictus* were tested for ChikV and dengue serotypes. No mosquito pools were positive for ChikV or dengue, and no locally transmitted cases have been detected.

The commission is able to get permits from NJDEP for trapping trapping nuisance beavers causing mosquito problem. Several beaver dams and nuisance issues were also addressed during this year.

Fish were used for biological control of mosquito larvae at eight locations in five municipalities. Overall, 7,500 fathead minnows and freshwater killifish were released in mosquito breeding habitats between June and October. A total of 31,893 inspections of larval habitats and 12,474 larvicide treatments were carried out for the season. A total of 627 samples containing 15,194 larvae from inspection sites, aerial sites, and service requests. The primary species present in larval samples were *Ae. vexans* (19.6%), *Cx. pipiens* (28.9%), *Cx. restuans* (13.8), and *Ae. canadensis* (12.6). Overall 36,309 catch basin treatments were carried out. Twenty-six (26) ground ULV missions were conducted in 20 municipalities using Zenivex® E4 RTU adulticides. Approximately, 69,411 lbs of larvicides were applied by helicopter over 17,755 acres. The larvicides used in aerial applications were Vectobac GS (34,091 lbs), Aquabac 400G (9,120) and ProVect 5G (12,875 lbs), and Abate 5BG (13,325 lbs). The Commission staff participated in 9 public education/outreach programs.

**Morris County**

The 2014 mosquito control season started out with an exceptional amount of snow melt in addition to a very wet spring that made the early part of the season very busy. By the time July and August rolled around we were looking at drought or near drought conditions which kept the mosquito population rather modest. This allowed for timely control efforts that kept the service requests at a minimum.

Light trap surveillance for 2014 had a noticeable increase from 2013, collecting a total of 27,218 adult female mosquitoes as compared to just 9,904 in 2013. Notable numbers included 12,808 *Aedes vexans*, 7,762 *Anopheles walkeri* and 2,418 *Culex* sp.

The Division submitted a total of 298 mosquito pools for West Nile Virus testing. Of these a total of 9 pools tested positive for the virus with a minimum field infection rate of .922 which is down from last season’s 2.991. A total of 6 birds were submitted by local health departments for West Nile testing with 2 testing positive.
A total of 6,900 Gambusia affinis were stocked at 3 separate locations while a total of 12,000 Pimephales promelas (fathead minnows) were stocked at 10 sites. In August we had a nice article written about the biocontrol program in the Daily Record.

Teresa Duckworth reports, four water management projects were completed under our NJDEP Freshwater Wetlands GP-1/Flood Hazard Act GP-4 Blanket Permit. Three were stormwater detention ponds and one was a pond that also collects stormwater.

Two ditch maintenance projects are in progress and will be completed in early 2015. Four tree de-snagging jobs were completed in the municipalities of Hanover, Parsippany-Troy Hills, Chester and Morristown. A beaver dam was removed in one town. Two additional tree projects are planned and should be completed by the end of the year.

Our water management staff continues to hand clear streams, channels and ditches throughout the county.

Our public education program is quickly growing and invitations to participate in community events continue to rise. We educate the public on mosquito biology, habitat and control, source reduction at home, tick biology and habitat as well as protecting themselves from mosquito and tick borne diseases.

We participated in 17 community events, new and unique this year were a Native Plant Sale, a day at a Farmer’s Market and a Boy Scout Expo. We also had a booth at 6 health screenings/health fairs including the County of Morris Safety and Wellness Fair for all county employees. We contributed materials to an additional four events, but for various reasons did not have staff present. Six presentations were given to a variety of community groups. A National Mosquito Control Awareness Week display was put up at the Morris County library with a focus on mosquito borne diseases. That same display was then used at the Rockaway Township municipal building for the duration of the season.

This year, we continued with our Asian tiger mosquito travelling display, 10 municipalities hosted the display for one or two week time periods in municipal buildings, senior centers or libraries. This is a stand alone display with materials available about the Asian tiger mosquito and source reduction.

Our Facebook page had an increase in traffic this year and continues to be used primarily for public education event announcements and educational purposes. Our website continues to be updated with new information.

The stormwater basin project continues, with new basins added to the database each winter. Staff members continue to inspect basins and perform minor hand cleaning projects as necessary. This year a partnership project has been initiated between several county departments including Planning, GIS, Soil Conservation and Mosquito to incorporate all of the stormwater basin data into one location.

We are also continuing to use GIS/GPS to analyze our surveillance data as well as part of our water management program.

**Ocean County**

The 2014 mosquito season can be characterized as one where we would continue to see the lingering effects of Superstorm Sandy. Key nuisance and disease vector mosquito species continued to have higher than average population numbers.

In particular, *Ae. cantator*, *Ae. vexans*, *An. bradleyi* and *Cs. melanura* continued to show significant increases in populations countywide as compared to the 34 year long term average. *Ae. cantator* showed higher than average numbers (115 % TO 205 %) for the beginning and end of the sampling season (May to Sept.) and only a slight increase as compared to 2013. *Ae. vexans* populations showed an increase overall of 46 %. This could be due to above average rainfall experienced during the season. Additionally, *An. bradleyi* increased by 115 % and *Cs. melanura* increased 63 %.
New Jersey Light Traps collected a total of 50,760 adult female mosquitoes from the 28 light traps spread throughout Ocean County. This represents only a slight increase from last year's collections (16 %). *Ae. vexans* was the most commonly captured species comprising 30 % of all specimens. *Cx. salinarius* (27 %) and *Ae. cantator* (16 %) were the other most common species in light trap collections. *Ae. sollicitans* captures were increased from last year by 153 %, but this is still way below long term averages (- 76 %). A total of 28 different mosquito species were collected from light traps.

The Aerial Larviciding Program treated a total of 22,521 acres in 2014. This total is a slight increase from the 2013 totals. However, it still represents a 56 % decrease in acres treated as compared to the long term average. The treatment of typical salt marsh habitat had increased from last year but the treatment of the storm affected wood line areas accounted for 2088 acres of the areas treated.

Continued OMWM projects on some of Ocean County's heaviest producing salt marshes could partly account for the low *Ae. sollicitans* populations and speaks to the success of the OMWM program. To date, a total of 130 acres of salt marsh have been managed in 2014. Additionally, crews have been working on several stream desnagging and storm water basin clearing projects.

The Yard Audit Program continued to expand this season with many requests received throughout the county. Additionally, many service requests were taken that dealt with mosquito issues at the increasing number of abandoned houses in the county. Once again, most requests dealt with *Ae. albopictus* production around the home.

West Nile Virus activity was low overall for 2014. A total of 7 positive mosquito pools were detected out of the 499 submitted to NJDHSS. Most positive pools were *Culex* complex, however, several pools of *Ae. japonicus* tested positive. A total of 8 positive birds found out the 42 accepted for testing. EEE activity increased in 2014. 3 positive pools of *Cs. melanura* were detected during virus surveillance. Additionally, 2 positive horse cases were reported in Ocean County from the same vicinity. These occurred late in the season and surveillance trapping did not collect many samples, although a positive pool of *Cs. melanura* was found.

Passaic County

In March, Dr. Charlene Gungil took over as Director / Health Officer of Passaic County Department of Health.

In April, Joseph Pezzillo joined the Department of Health’s hazardous materials response team. As an on-call duty officer, Joe responds to hazardous materials incidents in the county, including diesel spills, abandoned drums of chemicals, illegal discharges, odor complaints, etc… Mr. Pezzillo will continue on as a supervisor within the mosquito control division, in addition to his new role.

In May, Eric Green and Joseph Pezzillo presented a slideshow/lecture to the Master Gardeners of Passaic County. Pesticide applicators in attendance received core and category 8B credits for attending.

In August, Eric Green and Joseph Pezzillo attended the annual Passaic County Fair, and provided information on the county mosquito control program to the thousands of attendees. A table was set up with an informational display board, handouts, and models of a mosquito and a crow.

Larval activity was first detected on April 1. About 350 requests for service were received in 2014. Many of these complaints were a result of an early nuisance caused by mosquitoes of the univoltine *Aedine* variety. As the season progressed, residential complaints dwindled; in large part this was due to the tardiness and the reduction in the *Aedes albopictus* population in 2014. Typically, hundreds of Asian Tiger mosquitoes are collected annually in Passaic County; however, only 74 were collected in 2014. ATM usually represents 5% to 9% of our trap collections; yet, only 1% of the total mosquitoes collected in 2014 were Asian Tiger mosquitoes. Furthermore, the presence of *Aedes albopictus* was not detected until July (which was more than a month later than usual). Our guess has been that the long, cold winter significantly impacted overwintering eggs of the Asian Tiger mosquito.
PCMC submitted 174 mosquito pools to PHEAL; nineteen (19) of these tested positive for West Nile virus. A minimum field infection rate (MFIR) of 4.19 was recorded for these mosquitoes in Passaic County, but, there were no reported human cases of West Nile virus in Passaic County in 2014.

A major issue for Passaic County Mosquito Control in 2014 was Chikungunya. While there were no locally-acquired cases in Passaic County, there were about twenty three (23) residents who travelled to the Caribbean, primarily Dominican Republic, and returned after acquiring Chikungunya. Passaic County Mosquito Control already welcomed the reduced level of Asian Tiger mosquitoes from a residential complaints standpoint; but now we were grateful from a potential disease transmission standpoint. One pool of *Aedes albopictus* was submitted to PHEAL for Chikungunya/Dengue testing, and it came back negative.

Toward the end of 2014, utilizing an all-terrain vehicle and his personal GoPro camera, Eric Green began work on a public service announcement that is aimed at informing county residents on their role in reducing mosquito annoyance and disease transmission. The video will likely be on the PCMC website (www.passaiccountynj.org/mosquito) in early 2015.

Salem County

Salem County did not receive much rain in the 2014 mosquito season. The light trap numbers were fairly low at 38,187 mosquitoes from 15 traps. One trap was added this year near Mannington Meadow to survey the vast tidal meadow area. The most numerous species from all traps were: *Aedes vexans*, *Uranotaenia sapphirina*, *Anopheles quadrinaculatus*, *An. bradleyi*, and *Psorophora colombiae* with a few strong emergences of *Coquillettidia perturbans*.

Vector surveillance returned 0 positive mosquito pools out of the 283 pools submitted to PHEL. There were 1458 *Culex mix* and 9 *Culiceta melanura* within these pools. There were 77 pools of 454 *Aedes albopictus* submitted for Dengue/ChikV/WNV testing, yielding 0 positives.

Salem County MC was able to hire a seasonal employee, Michele Willetts, from May 26th to September 30th. She was an asset, assisting in the lab and the office.

SCMC has completed/ is currently working on 6 water management projects in 2014. There are plans to apply for the GP15 blanket permit this winter.

There were 416 requests for service. Each was inspected and treated, as necessary. Adulticiding was down this year as complaints were very often container- mosquito driven.

Three employees attended the Salem County Fair, August 5-8, with a new informational board, flyers, and a few giveaways. SCMC hopes to ramp up its public education in 2015.

Somerset County

We ran 431 gravid traps over the course of the season. *Culex* (comprising mostly *Culex pipiens* and *Culex restuans*) were high in the beginning of the season. Heavy rain in the spring produced large numbers of flood water mosquitoes. However, drought throughout the summer reduced all mosquito numbers, and floodwater mosquitoes were virtually nonexistent throughout the latter half of the season.

*Aedes albopictus* numbers declined significantly during the 2014 season. We contribute this to extensive cold temperatures during the 2013/2014 winter, which likely caused a great deal of egg mortality. Adult Asian tiger mosquito numbers were very low in traps, even during peak periods of the season. Nuisance complaints because of this mosquito were virtually nonexistent during the 2014 season.

No WNV human cases were recorded for the season. West Nile virus activity appeared to be lower than in recent years. Positive mosquito pools totaled 13 for the year compared to 30 in 2013. Virus activity was particularly low during the August and September, a time when historically virus activity increases.

Sussex County

Heavy rains in the spring produced significant populations of *Aedes sticticus* and other floodwater species in Sussex County. *Culex* numbers were relatively high during this time as well. Most mosquito populations faded as dry conditions took hold for the second half of the season. *Coquillettidia perturbans* were present during late June did persisted well into the summer months. *Culiceta melanura* populations were relatively high as well during the 2014 season and lingered in trap collections well into September.
In 2014, 269 mosquito pools were tested for West Nile virus. Of these pools, four pools tested positive. This represented 1.5% of the total. Compared to the past several years, virus activity in mosquitoes was substantially lower in 2014 but more along the historical norm for the county. Approximately 800 gravid and ABC traps collected 26,000 mosquitoes over the course of the summer. *Aedes japonicus* numbers were higher than in recent years. The Asian tiger mosquito, *Ae. albopictus*, did not appear in routine surveillance, which was a pleasant change from recent years. No human cases of West Nile virus were reported in the county in 2014.

**Union County**

Our mosquito control equipment was maintained and repaired during the off winter season. We also contributed our resources to the snow plowing and ice conditions throughout the winter season that extended well into our spring season. The Bureau was extremely occupied in the snow and ice road clearing and was able to address little of the drainage projects that still need to be cleaned up.

The 2014 mosquito surveillance season began March 1. Early cold temperatures this spring kept the mosquito population lower in Union County than the previous years (with unusually higher temps), and that trend continued throughout the summer. This season was monitored by twenty three semi-permanent New Jersey light traps for trends and populations. Our portable traps were used to locate the mosquito vectors of West Nile Virus.

**N.J. Light Trap Data**

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<td>781</td>
</tr>
<tr>
<td><em>Uranotaenia sapphirina</em></td>
<td>356</td>
</tr>
<tr>
<td>Other</td>
<td>103</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>40,100</td>
</tr>
</tbody>
</table>

**Portable Trap Data**

- Mosquitoes sent to State Lab...10,417
- Mosquito Pools Sent.............210
- Pools testing positive for WNV...90
- Number of municipalities........19

Mosquito Control handled 348 complaints for 2014. There were 14 separate spraying operations conducted during evening hours to control adult populations of mosquitoes.

**Warren County**

Warren County experienced a particularly cold and snowy 2013/2014 winter. As the weather warmed, the spring rains started to fall and incrementally increased as the months progressed. In May of 2014, about 7 inches of rain fell throughout the county, resulting in a very wet and busy spring season. We experienced very high populations of typically spring nuisance species, especially *Aedes sticticus*, which generated above average service requests for that time of year. Monthly rainfall amounts for June and July were much more evenly distributed and August was relatively dry.

Three aerial larvicide operations were performed (one in each month of April, May, and June) totaling 3,119 acres. Fish were obtained from the Hackettstown Fish Hatchery through the SMCC’s bio-control program on 5 occasions throughout the year, and over 50,000 mosquito-eating fish were stocked. The majority of our ground larviciding was done by four seasonal staff (late May-August) with hand pump sprayers filled with liquid *Bti* formulations. Early and late season applications were completed by full-time staff.

For the second year in a row, two retired postal workers were hired for the season. One was the SMCC courier for the north route mosquito pick-ups and the other was our seasonal Disease Surveillance/ATM inspector. These arrangements worked particularly well since both of them have very flexible schedules and are available late into the fall, if needed. In addition to the regular seasonal staff, an unpaid research intern was “hired” this year from East Stroudsburg University. This allowed for additional back-checking at ground larviciding and ground adulticiding sites. NJ Light Traps collected 20,793 mosquito specimens representing 23 species.
Over 32% of the NJLT collections were *Anopheles walkeri* (collected primarily from one trap in Liberty Township). *Aedes vexans* represented about 23% of the collections and mixed *Culex* species made up close to 20% of the total. In the CO$_2$-baited light traps, *An.walkeri* dominated the collection once again, representing almost 68% of the 16,864 mosquitoes collected. *Ae.vexans* trailed behind with almost 12% and *Ae.sticticus* was at a little over 3%.

Over the course of the season 287 pools of mosquitoes were submitted to PHEAL for WNV testing through the SMCC virus surveillance program. Only 7 pools tested positive, so it was a very low WNV activity year for Warren County. Only 1 bird (blue jay) out of the 5 submitted tested positive and once again, there were no confirmed human cases of WNV in the County. The State offered Dengue and Chikungunya virus testing, which we took advantage of. Unfortunately for the testing but fortunate in all other respects, we had a very low year for *Aedes albopictus*, so we did not have many specimens to submit. One hundred *Ae. albopictus* were submitted and tested for WNV/DENV/CHIKV and all tested negative.

The 2014 water management program was dominated by ditch maintenance, river clearing, and hand cleaning projects. The ditch maintenance projects were performed on ditches that we monitor on a regular basis. Upon request of the Warren County Soil Conservation District, the Commission took on the clearing of a stretch of the Pequest River between Liberty Township and Allamuchy Township. This prompted a few days’ worth of scouting and resulted in the discovery and removal of a few major river blockages. The seasonal employees were available for a few weeks’ worth of hand cleaning projects toward the end of the summer due to the extensively dry weather conditions. These projects included a lot of brush clearing for ease of access and treatment to sites, unclogging of outlets in woodland pools, and removal of various debris from ditches to improve water flow. The year will close out with the execution of a ditch maintenance project in Franklin Township that the Commission has been seeking to perform for several years.

The Commission is still in the process of replacing the aging pesticide storage facility with assistance from the County Buildings & Grounds Department. The project should be complete by year end. A used forklift was purchased to make it easier to handle pallets of granular pesticide and the movement of the ULV sprayers on and off of a cabinet was constructed to house a colony of *Aedes atropalpus*. The colony mosquitoes were used in the Commission’s public education program and will be available for insecticide trials next season. Following the 2013 human case of Powassen virus in Warren County a cooperative Tick Surveillance Project with East Stroudsburg University and the CDC was undertaken. Several hundred Ixodid ticks were collected by ESU graduate students and Commission staff. Collected ticks are being tested for a variety of pathogens, including Powassen virus. Final results have not yet been received but will be reported on at the upcoming NJMCA meeting.

**Hudson County**

Hudson County: For the 2014 season; 16,342 adult mosquitoes were trapped from 8 New Jersey light traps over 1,238 trap nights. The average for the season was 13.2 mosquitoes per trap night, down 3.6% from 2013. The predominant species were *Aedes vexans* (44%), mixed *Culex* species (23%), *Culex salinarius* (19%), *Cx. pipiens* (8%), and *Cx. restuans* (2%). We made a total of 2,724 inspections to nearly 300 larval sites (down 47% from 2013 due to injured employee). Our office received 15 service requests in 2014. *Ae. albopictus* problems were sporadic. The yearly rainfall total through October was up 2 inches from 2013. Average temperatures were almost 2 degrees lower than the 2013 average through October. As part of the WNV surveillance program, we submitted 185 pools for testing consisting of 9,027 mosquitoes. Of those, 76 pools of mixed *Culex* spp. tested positive from 16 different locations. The overall infection rate increased from 6.54 infected mosquitoes per 1,000 in 2013 to 11.6/1,000 in 2014. We collected positive mosquito pools every week from weeks 28-40. Weekly infection rates were above the 5-year average for the entire season from week 31 on. The high infection rates led to two human cases of West Nile; both patients recovered. There were 33 imported cases of Chickungunya in Hudson County. As a result, we began submitting *Aedes albopictus* for Chickungunya testing; no positive pools were found. In cooperation with The Rutgers Center for Vector Biology we continued to participate in a project exploring the autodissemination of pyriproxyfen by *Ae. albopictus*. We also conducted several autonomous trials of our unmanned aircraft for mosquito control.
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Presentation or Poster? _______________________

For oral presentations, submit an abstract with no more than 500 words and no graphics. Please use MS Word or mail a copy with this form. Oral presentations will be 15 minutes, unless other arrangements are made.

All presenters are responsible for their own registration.

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Authors: ____________________________________

____________________________________________

Affiliations: _________________________________

____________________________________________

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____________________________________________

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Topic Suggestions

• Mosquito and vector biology and behavior
• Current Research
• Surveillance Tools, Techniques, Technology
• Wetlands and Stormwater Management
• Emerging Vector borne Diseases and Responses

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INNOVATIVE
**Jersey Roots, Global Reach:** Spreading innovation that begin here in New Jersey to the rest of the world is a Rutgers goal. Most of our work here at the Center is available for free download from the Center’s website: [http://vectorbio.rutgers.edu/publications/index.php](http://vectorbio.rutgers.edu/publications/index.php). For convenience, articles pertaining specifically to mosquito research and control are typically provided to our stakeholders as they become available through blast e-mails. We also post publications from center members on a variety of topics you may find useful that aren’t widely distributed within the vector control community. For a complete listing of our work visit the site.

**Cooperative Research:** Randy Gaugler and Yi Wang, collaborating with Chinese and Tibetan researchers, returned from their trip to China with numerous field samples. Upcoming travel to Iran, lecturing to several universities, has been moved back but remains in the works. Greg Williams and Isik Unlu, working closely with Center members, have submitted innovative research proposals to the Mosquito Research Foundation for funding consideration to further explore Asian Tiger mosquito management ideas. Additional funds from USDA supported continuing collaborative research between Dina Fonseca and Peter Armbruster at Georgetown U. and Kristen Bartlett-Healy at Louisiana State U. examining the effects of temperature on mosquito development and physiology. Dina has also been working with researchers at the Center for Conservation and Evolutionary Genetics at the Smithsonian Institution on the population genomics of the Asian tiger mosquito.

**Biologist Working Group:** With new hires entering the workforce comes new enthusiasm. The October 15th meeting was well attended (see photo). County biologists reported on this past season’s mosquito control activities, shared preliminary results from research projects, reviewed arboviral activity and expressed interest in next years surveillance of arthropod-borne disease. We all look forward to the annual meeting presentations reviewing this field work. Our next meeting tentatively scheduled for January 15th 2015.

**Mosquito Specimens:** Frank Carle continues to make progress curating specimens from Richard Darsie’s estate. This collection includes mosquitoes species from North America, Guatemala and Nepal. In addition to the mosquito samples Darsie’s family has offered a variety of bound publications Dick had accumulated during his long and distinguished career. We hope to have a room dedicated to this collection set-up in the near future.

**Upcoming Courses:** With all the recent changes in program staffing around the state, new biologists and recent interest from the private sector our Mosquito Biology, Ecology, Surveillance and Control course has been updated for the Spring 2015 offering. Sign up information is available on the OCPE website [http://www.cpe.rutgers.edu/programs/pest_control.html](http://www.cpe.rutgers.edu/programs/pest_control.html). At last check about 75% of the seats have been taken, so sign up soon to reserve space. The ID section in particular will be limited seating. Contact Scott Crans (scott.crans@rutgers.edu) with any questions regarding training needs. Outreach events are posted to our Center web page [http://www.rci.rutgers.edu/~vbcenter/classes.php](http://www.rci.rutgers.edu/~vbcenter/classes.php).
Graduation: Brian Johnson, one of Dina’s students, successfully defended his PhD work this Fall and will be taking a post-doctoral position at the James Cook University School of Public Health in Cairns, Australia in December. We congratulate Brian on his work and wish him the best in his new adventures.

Awards/notes: Mark Robson, professor in the Department of Plant Biology and Pathology and Dean of Agricultural and Urban Programs, received the prestigious Sullivan Award from the New Jersey Public Health Association (NJPHA). This award, established in 1976 and named after a health officer who dedicated his life to improving public health, is NJPHA’s highest award presented to an individual for dedicated and outstanding public service in New Jersey.

The AW-ATM team will be the recipients of the 2014 Plant-Insect Ecosystem Section Integrated Pest Management Team Award.

The Team will be featured in an upcoming P-IE Newsletter. In addition, the team will be formally recognized at the P-IE Networking session on Monday, November 17, 2014 at the ESA Annual Meeting, with each member presented a trophy.

In September Dina Fonseca was an invited speaker at the Mosquito Control Association of Australia Annual Meeting in Mandurah, Australia as well as at the University of Sydney’s Marie Bashir Institute for Infectious Diseases and Biosecurity. Dina will also be presenting the keynote address at the upcoming Louisiana Mosquito Control Association meetings in New Orleans.

Scott Crans and Robert Jordan were invited speakers at the 40th anniversary meeting of the Pennsylvania Vector Control Association meeting held in State College PA.

Center for Vector Biology is in the early phases of moving onto the main campus into Thompson Hall along with the rest of the Entomology department.

Dina is now on the Editorial Board of Frontiers in Ecology and Evolution and of PeerJ. Frontiers in Ecology and Evolution publishes articles on the most outstanding discoveries across a wide research spectrum of Ecology and Evolution available in an open access platform. The mission of Frontiers in Ecology and Evolution is to bring all relevant Ecology and Evolution areas together on a single platform.

PeerJ is also an open access journal with very low publication charges. Their mission is to efficiently publish the world’s knowledge through Internet-scale innovation and open access licensing to save time, money, and to maximize recognition of author contributions. They aim to drive costs of publishing down while improving the publishing experience and providing authors a venue suitable for the 21st Century.

The Center has a new blog Rutgersvectorbio.wordpress.com. Feel free to visit, follow our activities and post comments.

Scott C. Crans
Mosquito Biologist Working Group

**NJ Office of Mosquito Control Coordination Update**

It’s hard to believe the year is coming to a close already, and next year’s mosquito season will be on us before we know it but somehow it’s true. And while hopefully everyone has some idea of the changes that have gone on in the Office of Mosquito Control Coordination over the past year and a half I wanted to take this opportunity to re-introduce ourselves to the community.

To start with, we have seen the retirement of two long time employees that were dedicated to running the OMCC on a day to day basis and building the program into what it is now. And for those years of effort we thank both Bob Kent and Claudia O’Malley for their service and dedication to the work done across the state. As a relative newcomer to the field of mosquito control in New Jersey, I had never seen the OMCC or our programs run without them so it’s been quite an adjustment working to fill their shoes and continue the work they’ve done.

However for good news there also are new employees to the OMCC for the first time in years and I want to use this chance to review some of our responsibilities and give you all some background information.
First I want to thank Steve Csorgo for helping to keep the program running while we learn what is required on a day to day basis. For some background information, Steve graduated from the Delaware Valley College of Science and Agriculture in the early 70’s and spent 21 years working for American Cyanamid until 1999. He first came into the OMCC in early 2001 and has been working here since. As we continue moving forward, Steve is in charge of the airspray and equipment use programs and in general has helped a great deal in teaching what our office is responsible for on a daily basis.

Joe Corleto has been working for the NJDEP in different divisions since 1999, and in August 2013 transferred from the Site Remediation Program to our office. He graduated from Virginia Tech in 1993 with a degree in Forestry and Wildlife Management. Currently in the office, Joe is concentrated on the bio-control program and helping county programs apply for and manage water management permits. As we continue to move forward and work with the land use department Joe will be reaching out to any counties that are interested and helping expand water management in mosquito control across the state. He will also be available to inspect sites when necessary for Gambusia affinis stocking and working with county agencies to find appropriate fish stocking sites.

Mary Evangelista started working at the NJDEP in 2001 with the Division of Parks and Forestry as a community forester and worked her way up to Regional Forester over the years. When given the opportunity, she transferred to the OMCC in June of 2013 as a Principal Biologist. On a daily basis she is in charge of Hurricane Sandy relief grant funding and has been working closely with all counties who applied for a grant to finalize their funding and help make sure their paperwork is properly done and all funds are reimbursed in a timely manner. This has been a process full of changes and challenges that we are still working through, but Mary has been dedicated to making sure we follow the process properly and helping everyone set up their programs.

And finally, I have been trying to learn the best ways to help all programs in any way our office and the commission can. I started out as a seasonal in Hunterdon County, and after graduating from Penn State in 2001 I was glad to jump into working as a biologist in Essex County for a few years before moving to Mercer County as an entomologist. When the opportunity to take over as the superintendent in Essex County opened up I took that chance and hopefully helped grow the program over the past few years. Earlier in this summer, I took the chance to move to running the OMCC and helping accomplish the goals of the SMCC across the state. While I am still learning my way through these programs, and working with all the counties to make sure we are doing as much as possible I appreciate all of your input and look forward to working closer with everyone in the future. I’d like to take this chance to urge you all to get in touch with any new ideas you have or ways you’d like to see the OMCC and SMCC programs run in the future. Thank you all again for your help so far, and I can’t wait to see where we can all take NJ mosquito control to in the future. Enjoy the holidays, and have a great start to the New Year.

Eric Williges
Administrator, OMCC
eric.williges@dep.nj.gov    609 292-3649
DON’T MISS the NEW JERSEY Mosquito Control Association 102nd ANNUAL MEETING at the Golden Nugget Atlantic City N.J. March 4 – 6, 2015
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