



Skeeter Scanner

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President's Message

I would like to take this opportunity to share my thoughts on Mosquito Control and further the value of the Michigan Mosquito Control Association. Mosquitoes and their control are my profession, livelihood, and many times my challenge. I enjoy discussing, promoting, and at times defending my profession. For those involved in mosquito control we understand we are in the public health business; our domestic mosquito species are responsible for spreading various diseases that threaten the very young to the old, and not to mention children of a different sort, our pets. Arboviruses and heartworm are real threats and must be monitored, nuisance mosquitoes too can be argued affect public health; a family's ability to recreate and remove stress is affected by unrelenting nuisance populations. Nuisance mosquito populations also affect commerce; tourism is a necessity to the health of Michigan's economy. Mosquito nuisance can keep people from festivals and events that so many of our towns depend on for prosperity and sense of community. We will never eliminate all disease threats and nuisance, but we can improve the health and commerce of our communities. It is this public service for individual homeowners to entire communities that validate mosquito control and the MMCA.



The MMCA is comprised of dynamic and intelligent individuals who give their time and expertise to promote mosquito control through integrated pest management. We strive to educate both purveyors and users about effective techniques and realistic goals that can be adopted to fit various budgets through science-based integrated mosquito management. An educated citizen or community will only improve the acceptance and future of mosquito control in Michigan. Our Association has strong ties to regulatory, academic, and private institutions. It is the cooperation of these various components that make the MMCA a valuable asset to all those involved in mosquito control. The MMCA is currently involved in regulatory issues, research, professional organizations, and education. This association is a necessary resource for all those involved in mosquito control from the proprietor to the consumer.

I would like to see a stronger membership comprised of individuals, businesses, academics, and the various organizations and municipalities that employ mosquito abatement. I understand that economics defines the marketplace and monetary choices must be made. I argue membership is a value; a stronger membership promotes a better future. I ask that you use the MMCA and your membership as a resource – use the professionals, website, annual meeting, and publications. I ask you to share your ideas and concerns about the Association, what we are doing right, what we can do better, or what we should be doing. We are a fluid association changing with science, regulations, and the needs of our membership. I leave you with this, please renew, maintain, or join our membership and participate in defining the future of mosquito control in Michigan.

William W. Stuyck

Making Mosquitoes Age Faster to Help Reduce Disease Transmission

Old mosquitoes usually spread disease, so Australian researchers figured out a way to make the pests die younger — naturally, not poisoned.

Scientists have been racing to genetically engineer mosquitoes to become resistant to diseases like malaria and dengue fever that plague millions around the world, as an alternative to mass spraying of insecticides.

A new report Friday suggested a potentially less complicated approach: Breeding mosquitoes to carry an insect parasite that causes earlier death.

Once a mosquito encounters dengue or malaria, it takes roughly two weeks of incubation before the insect can spread that pathogen by biting someone, meaning older mosquitoes are the more dangerous ones.

The Australian scientists knew that one type of fruit fly often is infected with a strain of bacterial parasite that cuts its lifespan in half.

So they infected the mosquito species that spreads dengue fever — *Aedes aegypti* — with that fruit-fly parasite, breeding several generations in a tightly controlled laboratory.

Voila: Mosquitoes born with the parasite lived only 21 days — even in cozy lab conditions — compared to 50 days for regular mosquitoes, University of Queensland biologist Scott O'Neill reported in the journal *Science*.

Mosquitoes tend to die sooner in the wild than in a lab. So if the parasite could spread widely enough among these mosquitoes, it "may provide an inexpensive approach to dengue control," O'Neill concluded.

Theoretically, it could spread: This bacterium, called *Wolbachia*, is quite common among arthropod species, including some mosquito types — just not the specific types that spread dengue and malaria, the researchers noted. And *Wolbachia* strains are inherited only through infected mothers, with an

evolutionary quirk that can help them quickly gain a foothold in a new population.

Next month, O'Neill's team begins longer studies in special North Queensland mosquito facilities that better mimic natural conditions to see how well the wMelPop strain persists as more mosquitoes are born, and what happens when they're exposed to dengue.

"By killing old mosquitoes, wMelPop could thus impact on dengue transmission," Pennsylvania State University specialists Andrew Read and Matthew Thomas concluded in an editorial accompanying the work, which they called "a major step."

It's possible that dengue viruses could evolve to incubate more rapidly if their mosquito hosts die younger, they noted, although that likely would be less of a problem than today's insecticide resistance.

Still, "determining whether it can remove enough infectious mosquitoes to be useful will be a challenge," the duo cautioned.

New Director Named for Tuscola County Mosquito Control



Jenifer Robb has been selected as the new Director for the Tuscola County Mosquito Control District. She began her job at Tuscola on Wednesday, April 1st. Jenifer previously worked for Saginaw County Mosquito

Abatement Commission for 9 years, and had been Treasurer for the MMCA for several years. We all wish Jenifer our best. Congratulations!

EPA Announces Updated Schedule for FIFRA Registration Review Program

EPA is announcing an updated schedule for the next four years of the registration review program, the periodic review of all registered pesticides

mandated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Summary: The Pesticide Registration Improvement Act of 2003 as amended in 2007 (PRIA II) requires EPA to complete registration review decisions by October 1, 2022, for all pesticides registered as of October 1, 2007. To ensure meeting this requirement, EPA will open approximately 70 pesticide registration review dockets annually beginning in FY 2009 and continuing through 2017, so that almost all pesticides registered at the start of the program will have dockets opened by 2017. Some biopesticide dockets will be opened in 2018 through 2020. The Agency anticipates that this scheduling will provide adequate lead times to complete registration review decisions for all currently registered pesticides by 2022. During the first several years of the program, EPA is developing a pipeline of pesticides under review so that it will have the capacity to make 70 or more decisions each year. EPA expects a total of about 710 pesticide cases comprising 1,136 pesticide active ingredients to undergo registration review by 2022.

EPA also announces that beginning in 2009, all new dockets for conventional pesticide cases entering registration review will have a 60-day public comment period. During the comment period on new registration review dockets, the Agency asks interested persons to review Summary Documents and other information in the dockets, and identify any additional information that the Agency should consider during the registration reviews of these pesticides.

Star Wars Scientists Use Laser Gun to Kill Mosquitoes in Fight Against Malaria

Experts behind the 1980s missile shield idea have helped to develop a laser that locks onto and kills airborne insects.

It is thought the device, dubbed the 'Weapon of Mosquito Destruction' (WMD), could be used against mosquitoes, which kill almost one million people around the world every year by spreading malaria.

The research in Seattle, reported in the Wall Street Journal, has been funded by Microsoft billionaire Bill Gates through his charitable foundation.

The WMD laser works by detecting the audio frequency created by the beating of mosquito wings. A computer triggers the laser beam which burns the wings off the mosquito and kills it.

Among those working on the research project are astrophysicists Dr. Lowell Wood and Dr. Jordin Kare who both worked on the original Star Wars plan to shield America from nuclear attack.

Dr Kare said: "We like to think back then we made some contribution to the ending of the cold war. Now we're just trying to make a dent in a war that's actually gone on a lot longer and claimed a lot more lives."

The laser missile defense system was proposed in the 1980s to knock Soviet missiles from the skies with beams. It was greeted with enthusiasm by President Ronald Reagan but mocked as "Star Wars" by Senator Edward Kennedy and never got off the ground.

The idea of using the same mechanism to kill insects was from Nathan Myhrvold, a former Microsoft executive who now runs an innovation firm call Intellectual Ventures. The firm was tasked by Mr Gates with exploring new ways of combating malaria and Dr. Wood suggested using lasers. Work on the WMD began last year.

<http://www.telegraph.co.uk/scienceandtechnology/science/sciencenews/4995428/Star-Wars-scientists-use-laser-gun-to-kill-mosquitoes-in-fight-against-malaria.html>

Winner of Drawing for Free 2010 Conference Registration

Congratulations to Lee Mitchell, from the Toledo Sanitary District. Lee is the winner of this year's drawing for a free registration to our 2010 MMCA Conference in Traverse City.

Natural Alternative to DEET Effective, Researchers Report

A compound of the Tauroniro tree in South America has been found to be effective in deterring mosquitoes from biting and to repel ticks, researchers said.

The study, published in the Journal of Medical Entomology found that isolongifolenone deters the biting of the mosquitoes more effectively than the widely used synthetic chemical repellent N,N-diethyl-3-methyl benzamide, known as DEET. It also repelled blacklegged ticks and lone star ticks as effectively as DEET.

Aijun Zhang said derivatives of isolongifolenone have been widely and safely used as fragrances in cosmetics, perfumes, deodorants and paper products, but new processing methods may make it as cheap to produce as DEET.

Since "isolongifolenone is easily synthesized from inexpensive turpentine oil feedstock, we are therefore confident that the compound has significant potential as an inexpensive and safe repellent for protection of large human populations against blood-feeding arthropods," the study authors said in a statement.

Malaria Mosquito Fights Back

The malaria transmitting mosquito has built resistance against popular insecticides used for indoor spraying and to treat bed nets, effectively removing one of the most important weapons used to fight the disease in Kenya.

In a study published online recently in the Genome Research journal and carried out by the Liverpool School of Tropical Medicine in the UK, researchers have confirmed suspicions that mosquitoes have evolved to overcome the effects of pyrethroids, a chemical derived from pyrethrum.

"This might mean that these insecticides can no longer be used to control malaria-causing mosquitoes," scientists say in the study, adding that they have discovered the gene responsible for resistance in the insects.

Studying the *anopheles* mosquito, the scientists found a family of genes that code for enzymes known as cytochrome P450s, which can soak up the pyrethroids, making them ineffective.

This study could strengthen the case for a return to DDT as a preventive tool. The new development comes barely a week after a study published in the New England Journal claimed that the malaria parasite is building resistance against the new and very effective artemisinin medicines which are the first-line treatments in Kenya.

The cases of resistance in *plasmodium falciparum* were detected on the Thailand-Cambodia border, in the same area that drug-resistant strains of the malaria parasite have developed in the past, most notably to chloroquine in the 1950s.

The reports of resistance confirm fears that artemisinin - extracted from a plant used in traditional Chinese medicine - is losing its effectiveness in some parts of Asia.

Although Kenya has adopted a malaria policy requiring that any anti-malarial be combined with another molecule to protect against building resistance, monotherapies are still widely used in the private sector.

Medical experts say if artemisinin resistance spreads quickly, there are no drugs in the pipeline to replace its combinations.

In Kenya, use of combined therapy or ACT as a first-line treatment, distribution of bed nets and indoor spraying with pyrethroids has been credited with helping reduce malaria mortality for children under five years by half, from about 35,000 deaths per year to less than 15,000.

Experts say a combination of factors, especially misuse by patients, the illegal manufacture of counterfeits with low levels of the active ingredients and failure to finish prescribed doses were responsible for the development of resistance by the malaria parasite to both chloroquine and sulphadoxine-pyrimethamine (SP). The same factors, they say, could herald the end for artemisinin-combination drugs.

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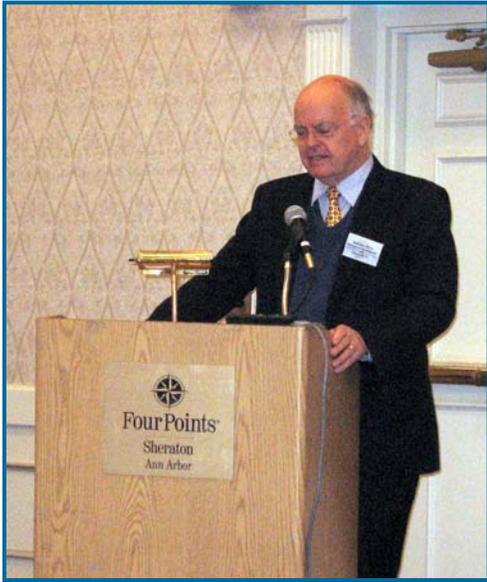
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**Scenes from the 2009
MMCA Conference**



Delinquent Mortgages, Neglected Swimming Pools, and West Nile Virus, California

Adjustable rate mortgages and the downturn in the California housing market caused a 300% increase in notices of delinquency. This led to large numbers of neglected swimming pools, which were associated with a 276% increase in the number of human West Nile virus cases during the summer of 2007

The Study

An outbreak with 140 laboratory-confirmed human cases of WNV was centered in the Bakersfield area of Kern County, California, during 2007. This case cluster was the largest mosquito-borne encephalitis virus outbreak in Kern County since 1952 and represented a 205%–280% increase in the numbers of confirmed WNV cases observed since 2004. The 2007 outbreak was unanticipated on the basis of surveillance data. Winter and spring weather was exceptionally dry and hot. Rural *Cx. tarsalis* populations remained below 5-year averages because of decreased rainfall, snow pack, and water allotments to agriculture. The Kern River, which flows through Bakersfield, remained mostly dry during spring and summer; key bird species decreased in abundance because of the drought and the previous negative effect of WNV infection; and surviving birds in key species had high herd immunity to WNV acquired during previous seasons. Despite these findings, the infection incidence in *Cx. pipiens quinquefasciatus* increased rapidly to 18.5 females/1,000 mosquitoes in June 2007 at traps within Bakersfield.

Careful examination of service requests for mosquito control made to the Kern Mosquito and Vector Control District (KMVCD) and an aerial survey of Bakersfield showed an extensive number of green or neglected pools. The likely reasons for neglected pools was the housing crises in Kern County and throughout California, which led to increased house sales, notices of delinquency of payment, declarations of bankruptcy and home abandonment. Kern County was especially affected, with a 300% increase in notices of delinquency in the spring quarter of 2007 compared with that of 2006. Associated with home abandonment was the expanding number of neglected swimming pools,

Jacuzzis (hot tubs), and ornamental ponds. As chemicals deteriorated, invasive algal blooms created green swimming pools that were exploited rapidly by urban mosquitoes, thereby establishing a myriad of larval habitats within suburban neighborhoods that were difficult to locate from the ground. These pools frequently were located within new housing tracts and not confined to old neighborhoods. An aerial photograph showed the extent of the problem, with 17% of the visible 42 pools and Jacuzzis appearing green and likely producing mosquitoes. The extent of this problem also was indicated by the marked increase in the number of pools that required treatment by the KMVCD.

By law, all swimming pools or properties with pools have to be surrounded by 2-m high fencing and gates that must be locked when the homeowner is not present. These locked fences provided a formidable obstacle for mosquito control personnel to overcome for surveillance and treatment. Alarming, during 2008, many of these unmaintained pools previously positive for *Cx. p. quinquefasciatus* were now occupied by *Cx. tarsalis*, a more competent vector of WNV than *Cx. p. quinquefasciatus*. Collections of immature mosquitoes from 31 neglected pools taken during February–August 2008 produced 8,978 emerging adults, of which 59% were *Cx. tarsalis* and 41% were *Cx. p. quinquefasciatus*.

Conclusions

Anthropogenic landscape change historically has facilitated outbreaks of pathogens amplified by peridomestic vectors such as *Cx. pipiens* complex mosquitoes and associated commensals such as house sparrows. The recent widespread downturn in the housing market and increase in adjustable rate mortgages have combined to force a dramatic increase in home foreclosures and abandoned homes and produced urban landscapes dotted with an expanded number of new mosquito habitats. These new larval habitats may have contributed to the unexpected early season increase in WNV cases in Bakersfield during 2007 and subsequently have enabled invasion of urban areas by the highly competent rural vector *Cx. tarsalis*. These factors can increase the spectrum of competent avian hosts, the efficiency of enzootic amplification, and the risk for urban epidemics.



News From Around The Districts

SAGINAW

Interviews for seasonal employment were completed in early March and our annual training session was held on March 20-21st. New staff will represent approximately 26% of our seasonal workforce which is typical for our operation.

Spring *Aedes* (no more *Ochlerotatus*) were first found on March 16th which is earlier than normal; historically we find our first larvae on March 22nd. We are in the process of securing permits to allow us to conduct aerial larviciding for spring mosquitoes on federal refuge and state game lands. It appears that we have met the criteria this year for the federal refuge but may encounter difficulties with getting permits for the two State game areas we annually larvicide. Hopefully, by the time you receive this newsletter all the permitting issues will be resolved. It is also our plan to work with the Shiawassee NWR staff to update their *Human Health Emergency Response Plan*. If we can be successful in implementing changes to this plan it would streamline the permitting process and hopefully alleviate the yearly permitting issues we have recently experienced.

School presentations by our education department continue to be very popular. This school year our Education Coordinator has already scheduled over 200 classroom presentations. This spring we will be conducting a poster contest for all third, fourth, and fifth grade students in Saginaw County with this year's theme "Stop, Look, And Dump It Out." Margaret Breasbois and Bill Stanuszek judged science fair projects at the annual Saginaw County Science and Engineering Fair and selected two students to receive awards sponsored by our agency.

By now I'm sure you are all aware of the Jan. 7, 2009, U.S. Court of Appeals, 6th Circuit court ruling in regards to the Clean Water Act and the possible requirement for mosquito control larvicide applications to need National Pollutant Discharge Elimination System permits. This ruling could have a significant effect on our agencies' operations if left unchallenged. We will be working closely with the American Mosquito Control Association and our own Michigan Mosquito Control Association to get a favorable resolution to this situation.

TUSCOLA

Jenifer R. Robb has been appointed Director/Operations Supervisor for Tuscola County Mosquito Abatement. We congratulate her and we look forward to the official start of her tenure. Mrs. Robb has, as many of you know, been an important member of Saginaw County's program for many years. At the same time that we welcome Jenifer, we wish Bill Wallace all the best. For twelve years as Director, he served Tuscola County with distinction.

Meanwhile we are fast approaching "the season". The mechanics have returned and, are busy readying the trucks. The foremen are performing inventories, and spending way too much money. Materials have begun to be delivered, technicians are being contacted, and all those administrative details are, hopefully, addressed. And all for the sake of such a tiny critter!

Once more unto the breach, dear friends. The snow is melting and spring mosquito eggs are hatching. *Culex* mosquitoes are preparing to emerge from hibernation and to get the West Nile virus cycle started again. In Midland County, we stand ready to meet our foes on the field of battle (or woodland pool of battle as the case may be); by the time your read this, our seasonal employees will be into the woods.

On January 7, 2009 the U.S. Sixth Court of Appeals held that the EPA rule on National Pollution Discharge Elimination System (NPDES) permits was not a reasonable interpretation of the Clean Water Act and vacated the rule. At this time, the EPA rule remains in effect and permits are not required for the application of pesticide products to water in accordance with the product's FIFRA label, but the day when such permits are required may be coming soon. Please keep your eyes open for updates on this issue.

Finally, I would like to thank Joyce McLaughlin and the rest of the MMCA Planning Committee for their hard work organizing our 2009 annual conference. As always, this meeting proved to be an educational and entertaining event. Please make note of any interesting occurrences you might observe this mosquito control season and consider sharing information about them with your colleagues at the meeting in Traverse City next February.

We would like to think winter is indeed over and that soon we will see the beautiful daffodils in bloom and get back into the great outdoors for some exercise and to search for mosquitoes.

We've been busy since the MMCA Annual Meeting with mapping of retention ponds and ULV routes. We also built a tenth liquid ditch truck unit and purchased an electric pallet jack, new storage racks for the Cold Storage area, and first aid kits for all trucks.

Since attending Delta College's Employment Fair on March 17, we have been diligently interviewing to fill seasonal technician jobs for the 2009 season. While we have received over 100 applications, about 75% of employees from last season are returning. Two training sessions will be held for all employees utilizing an updated BCMC Training Manual as well as the new National Pesticide Applicator Certification Core Manual.

We compiled our 2009 Program Plan in March, followed by hosting the Mid-Michigan Technical Advisory Committee meeting on March 4. Papers were filed with MDEQ for approval authorizing mosquito control in surface waters and our comprehensive community outreach program was revised and submitted to the MDA.

Control material bids were opened in January with materials seeing a slight cost increase or, in the case of Permethrin, a cost reduction. That doesn't happen very often! Fixed wing applicators submitted sealed bids for the spring treat project in 2009. A new contractor, Jacob Baker of Earl's Spray Service submitted the lowest, qualified bid with Clarke Mosquito Control providing helicopter services.

Staff continue to update training manuals, attend technology training programs, update the Hazardous Communication Plan and MSDS manual, revamp presentations that will soon be broadcast on our local Bay 3-TV, learn a new finance/payroll software program initiated by Bay County government, and send announcements to media and government offices in preparation for the upcoming season as well as other necessary correspondence

MMCA Sponsors Annual Mosquito ID Class.

This is a reminder of our annual Mosquito ID Class to be held on **Thursday, May 21st.** from 9am-3pm at Saginaw County Mosquito Abatement Commission.

There is no charge for this class but, participants must bring their own microscopes.

Call Randy at 989-755-5751 to make your reservation for this free seminar.



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Spring