



# Skeeter Scanner

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COMMITTEE



[www.mimosq.org](http://www.mimosq.org)

## President's Message

With the mosquito season ending let's take a moment to reflect on what this season has taught us. This is a necessity to better respond to future mosquito issues whether nuisance or disease. The 2014 mosquito season has confirmed or at least bolstered certain aspects of mosquitoes and their control.



- Rainfall impacts mosquito populations. Obviously for nuisance species, large rainfall events result in more flooded habitat such as, ditches, yards, woodlots, fields and river floodplains. However, large rainfall events impact disease vectoring *Culex* mosquitoes negatively. These mosquitoes are well at home in many urban environments; a majority of urban breeding habitat is often storm water structures like catch basins. With large rain events these catch basins may be flushed and so to the mosquito larvae.
- West Nile virus activity is muted in cool/wet summers and more prominent in hot/dry summers. Hot summers with limited rainfall offer undisturbed breeding in catch basins for longer durations; promote virus amplification; proximity increases between birds (host) and *Culex* (vector) due to limited water resources.
- Weather can interrupt the best laid mosquito control strategy. Rainfall of course, but this year was cool and often windy, which hampers both adulticide operations and adult mosquito activity. Mosquito activity (host seeking) can cease or curtail when temps get below 55-50°F or winds get above 10 mph (check your adulticide labels). This limited adult mosquito movement and label language limit adulticide operations, slowing progress in one area of nuisance and preventing the operations in another.

Mosquito borne disease in Michigan was low for the 2014 season (cool and wet). There was additional surveillance done by some local health departments this year. A few public health departments took part in West Nile surveillance in part due to Michigan Department of Community Health and motivated individuals from within each health unit. As of early October, Michigan has only had one human case of West Nile virus. Nine mosquito pools and 19 birds have tested positive for West Nile virus this year. One mosquito pool was found positive for La Crosse encephalitis in Saginaw County. It was only two years ago in 2012, Michigan had 202 confirmed human cases and 17 deaths attributed to West Nile virus.

The MMCA is currently working hard to keep its membership State certified. We held our annual 7-F training session on October 20<sup>th</sup> in Bay City. Thank you to all those that presented and special thanks to Dr. Tom and Gale Wilmot for the great food and Doug Allen for planning the event. Planning Chair, Randy Knepper is working hard on the 2015 MMCA annual meeting to be held on February 4<sup>th</sup> & 5<sup>th</sup> at the Shanty Creek Resort in Bellaire, Michigan. It is not an easy task putting this quality event together, so thank you Randy. The MMCA continues to look to better serve its membership. Let us know how we can better serve you. I hope to see you in Bellaire this February.

## MMCA Welcomes Dr. Carl Doud, New Director of Midland County Mosquito Control

Dr. Carl Doud has crisscrossed the country throughout his career, but as the new Director of Midland County Mosquito Control, he has found a new home.



Dr. Doud, who was raised in a suburb south of Kansas City, Missouri, became director of Midland County Mosquito Control in August, following the retirement of Dr. Tom Wilmot. He brings a wealth of knowledge to the job, having received a Biology degree from the University of Central Missouri, and Entomology degrees from Oklahoma State University and Kansas State University.

Dr. Doud served 5 years (1987-1992) in the US Air Force as a vehicle mechanic before attending college. After receiving his degrees, he served in the US Navy from 1999 to 2014 as a Medical Entomologist and Technical Director of the Navy Entomology Center of Excellence before transitioning to Michigan and his new position in Midland.

Dr. Doud and his wife Katrina now reside in Edenville Township in Midland County on property where he looks forward to finally being able to hunt. Their 5 children, Kiernan (13), Tirzah (12), Thea (10), Jayslyn (8), and Cutler (3), are home schooled, and together they enjoy bike rides, geocaching, attending festivals, movies and musicals.

MMCA had the opportunity to talk with Dr. Doud to learn more about his background and what the future has in store in Midland.

### **MMCA: How did you get into the mosquito control field?**

**Dr. Doud:** Mosquito control is a large part of our responsibility as military entomologists. Malaria and dengue fever are examples of significant risks to troops that require vector control. I am grateful to be able to transition from serving the nation and US Constitution to serving the Midland County residents.

### **How will your previous experiences help in your new role as Director of MCMC?**

I will apply my career skills as a Navy Entomologist to the position. I am very grateful for the rich experiences that I gained from my military service and hope that it will enhance MCMC.

### **Describe your vision for MCMC:**

To be known for efficiency, effectiveness and fiscal responsibility. Never taking for granted the precious provision of support of county taxpayers; to build on the work done by my outstanding predecessors, Cynthia Chilcote and Tom Wilmot; to ensure that MCMC maintains its excellent reputation among the mosquito control community and the residents of Midland County; to anticipate and adapt to future challenges, e.g. changes in mosquito control tools/technology and the potential for increased regulation.

### **What's the biggest challenge MCMC faces in fulfilling its mission?**

Unlike mosquito control districts in much of the southern US, Michigan districts, including Midland, must hire, train and equip the majority of its staff each season. This is a significant challenge, yet I am impressed at the ability of the core staff to do this each year.

### **What keeps you motivated?**

The responsibility to provide a valuable service to the residents of Midland County. I am grateful as well for the outstanding staff at MCMC. I look forward to coming in to work, that has not always been the case in other positions I have held!

### **What lessons have you carried with you over the years?**

I value in particular optimism and humility. These qualities inspire me in those responsible to lead.

### **Who or what inspires you?**

As stated above, humility and optimism in particular. I am inspired by those who see difficult situations as opportunities; who refuse to become bitter and maintain a perspective of thanksgiving; who see their own success in light of those around them who helped to make it happen.

One of my favorite quotes that highlights humility is that of Samuel Morse, the inventor of the Morse

code and telegraph. When asked about the significance of his contribution he commented that, “I have made a valuable application of electricity, not because I was superior to other men but solely because God, who meant it for mankind, must reveal it to someone and He was pleased to reveal it to me.”

**Tell us something about yourself that most people don't know about you:**

I have a sense of humor and can be quite light hearted! Because I have a quiet and reserved personality, some are surprised to realize this about me based on their first impression.

The Michigan Mosquito Control Association would like to thank Dr. Doud for taking the time to introduce himself to our membership. We wish him much success during his tenure in Midland!

**Malaria Vaccine**

After thirty years of research, the British drug company GlaxoSmithKline announced that it is seeking the approval of the European Medicines Agency (EMA) for its anti-malaria vaccine, known as RTS,S.

In October 2013, the company announced the results of its vaccine trial in infants 6 to 12 weeks old, and older babies 5 to 17 months old at their first vaccination. After 18 months of follow-up, the younger group experienced a 27 percent decrease in cases of clinical malaria compared to like-aged infants who had received a placebo vaccination. Babies who received their first vaccination at 5 to 17 months of age experienced 48 percent fewer cases than same-aged infants injected with the placebo. Glaxo estimated that for the older babies, the vaccination prevented an average of 941 cases of clinical malaria for every 1000 children vaccinated. For the younger group, the vaccine prevented 444 cases for every 1000 vaccinations. Since over 600,000 Africans — mostly children under five years old — die from malaria every year, this vaccine could potentially have a huge impact on public health.

The vaccine trials were conducted at eleven research centers in seven African countries, and over 15,000 children participated. One of the

principal investigators, Halidou Tito from Burkina Faso, commented “Many millions of malaria cases fill the wards of our hospitals. Progress is being made with bed nets and other measures, but we need more tools to battle this terrible disease.”

Longer-term studies [indicated](#) that the vaccine's efficacy waned over time, with efficacy being 65 percent six months after vaccination, but only about 17 percent after four years.

**Electric ULV Machine**

Bay County Mosquito Control introduced the use of a new truck-mounted electric ULV machine into their adulticiding fleet during the 2014 treatment



season. The electric machine was incorporated into the program initially for the relative quietness of the sprayer, under 80db. Adulticiding with this unit was prioritized to noise-sensitive areas in Bay County, including the campground at Bay City State Recreation Area, where the quieter machine would cause less distraction to campers at night. The response from the Recreation Area staff has been a favorable one.

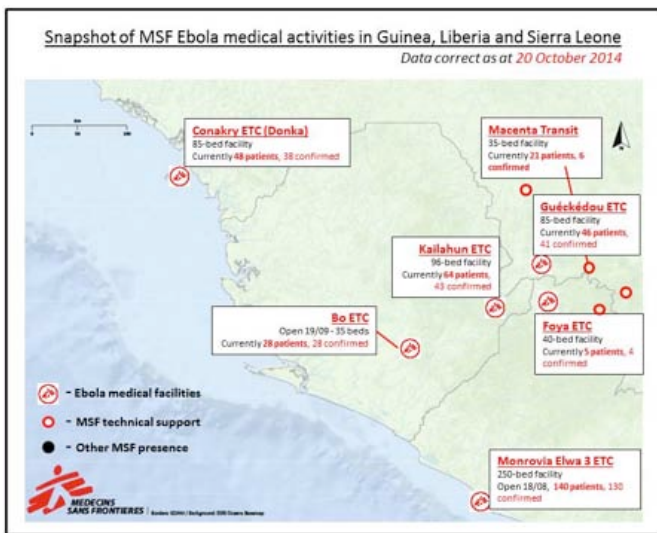
The quieter machine has also had its “drawbacks” as residents often don't hear the expected sound of the fogger in their neighborhood during routine township sweeps, therefore don't realize they are receiving treatment. However, the unit does include an illuminated spray head to highlight the fog to verify the machine is operational and material is being applied.

Other advantages Bay County has noted with this machine include the little-to-no-maintenance associated with the electric unit. The absence of a small engine and components such as couplers, head gaskets, and blowers has eliminated maintenance on parts that easily wore out over time. The machine also comes in at a light weight of 140 lbs versus the nearly 500 lbs of gas-powered machines. Expected maintenance includes the

Last week, the World Health Organization (WHO) projected as many as 20,000 people infected over three months in Liberia, Sierra Leone, and Guinea.

We are in uncharted waters. Transmission rates are at unprecedented levels, and the virus is spreading quickly through Liberia's capital, Monrovia.

I stand here today, as the president of a medical humanitarian organization on the front lines of this outbreak since it emerged. My colleagues have cared for more than two thirds of the officially declared infected patients. Even as we have doubled our staff over the last month, I can tell you that they are completely overwhelmed.



Doctors Without Borders/Médecins Sans Frontières (MSF) has been ringing alarm bells for months, but the response has been too little, too late. The outbreak began six months ago, but was only declared a “Public Health Emergency of International Concern” on August 8.

While funding announcements, roadmaps, and finding vaccines and treatments are welcome, they will not stop the epidemic today.

We have been losing for the past six months. We must win over the next three. And we can.

Many of the Member States represented here today have invested heavily in biological threat response. You have a political and humanitarian responsibility to immediately utilize these capabilities in Ebola-affected countries. To curb the epidemic, it is imperative that States immediately deploy civilian

and military assets with expertise in biohazard containment. I call upon you to dispatch your disaster response teams, backed by the full weight of your logistical capabilities. This should be done in close collaboration with the affected countries. Without this deployment, we will never get the epidemic under control.

The following must be prioritized:

- Scaling up isolation centers;
- Deploying mobile laboratories to improve diagnostic capabilities;
- Establishing dedicated air bridges to move personnel and equipment to and within West Africa;
- Building a regional network of field hospitals to treat suspected or infected medical personnel.

While these bio-defense teams will help to immediately shore up the response on the ground, the WHO and other public health agencies must operationalize the Ebola Road Map.

We must also address the collapse of state infrastructure. The health system in Liberia has collapsed. Pregnant women experiencing complications have nowhere to turn. Malaria and diarrhea, easily preventable and treatable diseases, are killing people. Hospitals need to be reopened, and newly created.

Lastly, we must change the collective mindset driving the response to the epidemic. Coercive measures, such as laws criminalizing the failure to report suspected cases, and forced quarantines, are driving people underground. This is leading to the concealment of cases, and is pushing the sick away from health systems. These measures have only served to breed fear and unrest, rather than contain the virus.

UN member states cannot focus solely on measures to protect their own borders. Only by battling the epidemic at its roots can we stem it.

This is a transnational crisis, with social, economic and security implications for the African continent. It is your historic responsibility to act.

We cannot cut off the affected countries and hope this epidemic will simply burn out. To put out this fire, we must run into the burning building.

**William J. Lechel, II  
Memorial Scholarship**

# Scholarship Opportunities

**Kenley Farrel  
Memorial  
Scholarship**

*Complete scholarship information and applications are available on the MMCA website:*

## William J. Lechel, II Memorial Scholarship

The Lechel Scholarship is a student presentation competition held in conjunction with the MMCA Annual Conference. College students entering this competition will present findings from their own scientific research or a synopsis of existing research at the 2015 conference at Shanty Creek.

Presentations on mosquitoes in particular are preferred, but related research may include information in health or pest-related fields including insects, weather, disease surveillance and science education. A total of 15 minutes will be allowed for each presentation.

**\$1,000 Award**

**Sponsored by APM Mosquito Control & Clarke**

**Application Deadline: November 15, 2014**

## Kenley Farrel Memorial Scholarship

**“What is the Disease Potential in Michigan for Current and Potential Invasive Mosquito Species?”**

MMCA annually presents an essay scholarship to encourage interest in mosquito control and to assist a student financially towards a higher education in Natural Science or a related field.

1st Place: \$1,000

2nd Place: \$250

**Sponsored by Hatfield Spraying Service & MMCA**

**Application Deadline: November 1, 2014**

**MMCA  
Board**

# ***CALL FOR NOMINATIONS!***

**MMCA encourages anyone with an interest in promoting mosquito control to please consider a position on the Board, we encourage new faces and new ideas.**

**Positions open for the nomination of candidates will be Vice-President, Secretary, and Trustee (2). To propose a candidate please contact Rebecca Brandt, brandtr@baycounty.net or (989)894-4555.**

**Elections will be held during our Annual Business Meeting in February 2015.**

# Board Meeting Highlights

MICHIGAN MOSQUITO CONTROL

MMCA will again be hosting the annual 7F Training Session on October 20, 2014 at Bay County Mosquito Control. Early registration numbers show there is a high interest in the upcoming session and seats are expected to fill fast.

The MMCA Board will be creating an informative document on the process of starting up a mosquito control program. This is in response to inquiries MMCA receives each year from local municipalities and citizens. The document will outline the most important issues to consider when starting a program such as how to acquire funding, staffing needs and surveillance.

Total MMCA membership has grown to 136 members.



## CALL FOR NOMINATIONS

### MMCA Awards

H. Don Newson

#### Distinguished Service Award

*To give recognition and appreciation to the recipient for his/her meritorious contributions made in the practice of mosquito control, and in support of the MMCA in its endeavor to improve quality of life.*

#### Requirements for Nomination

- The nominee shall be/have been active in the MMCA and shall be a current member in good standing.
- The nominee must have made a highly significant contribution(s) to the field of mosquito control and/or the MMCA with special consideration given to:
  - Contributions and outstanding service to the practice of mosquito control.
  - Activities and services, which bring meritorious recognition to the profession of mosquito control.
  - Highly beneficial contributions and commitment on behalf of the MMCA.

George B. Craig, Jr.

#### Mosquito Control Advocacy Award

*To give recognition and appreciation to the recipient for his/her outstanding contributions of promoting mosquito control and/or MMCA.*

#### Requirements for Nomination

- The nominee may be outside the mainstream of mosquito control practice, a business or industry, a group of people, or one particular individual.
- Membership in the MMCA is not required.
- The nominee is to have made an outstanding contribution(s) to mosquito control and/or the MMCA.

**DEADLINE: JANUARY 9, 2015**

For more information and award applications visit the MMCA website: [www.mimosq.org](http://www.mimosq.org)

## ***Wolbachia* Enhances West Nile Virus (WNV) Infection in the Mosquito *Culex tarsalis*** (Plos one)

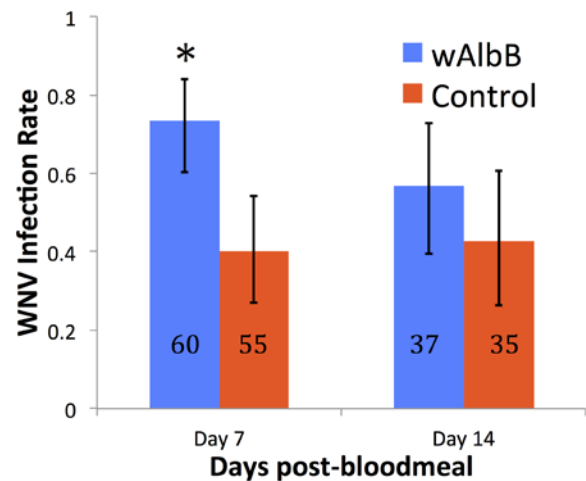
Novel strategies are required to control mosquitoes and the pathogens they transmit. One attractive approach involves maternally inherited endosymbiotic *Wolbachia* bacteria. After artificial infection with *Wolbachia*, many mosquitoes become refractory to infection and transmission of diverse pathogens.

We evaluated the effects of *Wolbachia* (wAlbB strain) on infection, dissemination and transmission of West Nile virus (WNV) in the naturally uninfected mosquito *Culex tarsalis*, which is an important WNV vector in North America. After inoculation into adult female mosquitoes, *Wolbachia* reached high titers and disseminated widely to numerous tissues including the head, thoracic flight muscles, fat body and ovarian follicles.

Contrary to other systems, *Wolbachia* did not inhibit WNV in this mosquito. Rather, WNV infection rate was significantly higher

in *Wolbachia*-infected mosquitoes compared to controls. Quantitative PCR of selected innate immune genes indicated that REL1 (the activator of the antiviral Toll immune pathway) was down regulated in *Wolbachia*-infected relative to control mosquitoes.

This is the first observation of *Wolbachia*-induced enhancement of a human pathogen in mosquitoes, suggesting that caution should be applied before releasing *Wolbachia*-infected insects as part of a vector-borne disease control program.



## **Photo Salon - 2015**



The Michigan Mosquito Control Association would like to request submission of photographs for presentation during the Awards Banquet at our 2015 Conference. All shutterbugs are invited to submit digital photos, slides or prints to Photo Salon organizer Randy Knepper [RKnepper26@chartermi.net](mailto:RKnepper26@chartermi.net) by January 31, 2015. Please, do not submit photos that have been shown at previous MMCA salons.

If a sufficient number of photos are received, cash and prizes will be awarded in the following categories: Mosquitoes, Operations, Surveillance, Mosquito Habitat and Nature/Wildlife. A prize will also be offered for the most amusing title or intriguing story to accompany a slide.





# News From Around The Districts

We had a very busy start to the 2014 mosquito season with large numbers of floodwater mosquitoes.

The continuous rains throughout the summer kept our mosquito populations above average for the entire season. Weather conditions made roadside fogging a challenge as we tried to work around the wind and rain.

Tuscola County was up for millage renewal in August of 2014, the millage passed with 85% of voters in favor of Mosquito Abatement.

July 12<sup>th</sup> TCMA held a scrap tire drive with great success. Twelve additional tire drives were scheduled throughout the County for 2014.

At this time all surveillance data is complete. August 21<sup>st</sup> M.S.U. confirmed a positive pool for WNV. Four crows in total were tested, two in house that were negative and two tested at M.S.U. that were positive for WNV.

The end of season process of winterizing vehicles and equipment is nearly complete. We are in the process of finalizing building plans for garage and insecticide storage. We will begin construction in the early spring.

TUSCOLA

The third quarter of 2014, which encompasses the bulk of the mosquito treatment season, started out dry, but ended with a swath of 5-6 inches of rain that fell in Bay City and our most populated townships. Needless to say, we ended the season with a bumper crop of *Aedes vexans* and *Aedes trivittatus*. Adult mosquito populations peaked around the Labor Day weekend. We ended the season officially on October 1, followed by fall clean-up.

Our second annual scrap tire drive was held September 6 where we recycled hundreds of tires as breeding habitats from the community.

Disease surveillance efforts continued through September. Three hundred thirty-seven pools (or groups of mosquitoes) were assembled with 7,838 total females (mainly *Coquillettidia perturbans* and *Culex* mosquitoes). These were mosquitoes that were collected in CDC traps, New Jersey light traps, or gravid traps. Compared to 2012 and 2013, there was a decrease in disease activity for Bay County. One *Culex* mosquito sample collected from Bangor Township in mid-August tested positive for West Nile Virus this season. None of the nine Crows or Blue Jays tested this season was positive for mosquito-transmitted viruses.

We are pleased to announce the marriage of our Master Mechanic Justin Krick to Tracy Estrada. An outdoor wedding was held at The Grand near Essexville on Friday, July 11. Justin has been employed as Bay County's Master Mechanic since 2001 and Tracy works for the Social Security Administration. They honeymooned in the Dominican Republic.

BAY



Another season ends and a new fiscal year begins, and with that a sense of accomplishment and anticipation as we look to next season. During the mosquito season, Saginaw County received on average 2.5 inches above normal rainfall with some areas with well over 4 inches above normal. The rain events fell in what seemed like two-week intervals resulting in a consistent mosquito nuisance in portions of the County. The season also was cooler than normal disrupting many of our control efforts. As always we learn along the way, and are better equipped to fight the next mosquito threat. Our control season concluded on September 26<sup>th</sup> due to insufficient adulticiding conditions.

All our surveillance data is now complete for 2014. Final results had a total of 3 corvids (2 crows and 1 blue jay) and 4 mosquito pools positive for West Nile virus. In addition, one mosquito pool tested positive for La Crosse encephalitis. Two of the positive mosquito pools were on the Shiawassee National Wildlife Refuge property. As in past years these positive detections on refuge property should allow for an uneventful process in securing permits for aerial larviciding in the spring of 2015. We again would like to thank Michigan State University and Dr. Mike Kaufman for their arbovirus testing services.

Our Education Department had a busy summer adding some new events to our summer schedule and returning to the Saginaw Fair. School presentations are in full swing, with 121 classroom presentations already scheduled.

It also seems tires had another successful year. We again had three week long tire drives and also accepted tires at our facility from May 1 – August 31. We collected a total of 8,314 tires this summer.

We are nearly fully staffed we are pleased to welcome Courtney Eggebrecht, Account Clerk and Chuck Pearce, Biologist. They are both doing an amazing job. We wish Melissa Stanke good luck in her new position in the Thumb, much closer to her family and farm.

As you all are no doubt aware, Dr. Tom retired this past summer and I had the honor of coming in as the third Director of MCMC. It has been a significant change from my previous life as a Navy Entomologist, yet a welcome change. The entire Doud family has been looking forward to the day that we could settle into a post military existence and both this job and location are just what we had hoped for. Furthermore, I am grateful for the outstanding MCMC staff who has kept the operations running while the “new guy” tries to keep up. And thanks to the Michigan Mosquito Control community for the warm welcome I have received.

As an update on our efforts to adulticide on state-managed land, I am thrilled to report that Tom’s relentless efforts resulted in Michigan DNR approving on 1 July 2014 our request to apply Zenivex. We made a number of applications to three strategic locations with county residents nearby.

Unfortunately, it appears there are ongoing issues with DNR regarding his matter. Upon providing a summary of our applications, they questioned our use of the roads and trails utilized while spraying. It seems that we are expected to only apply from county-maintained roads. So it looks as though I will get to take the baton from Tom and carry on the campaign to protect our residents!

On 7 October Charlie Dinsmore was honored during an employee appreciation ceremony by the Midland County Board of Commissioners. It was great to see Charlie’s hard work and dedication recognized in this way.

As we move into the fall and winter I will take the opportunity to settle in and prepare for the 2015 mosquito season. Folks around here keep talking about this polar vortex thing. My hope is that it will be a once in a generation phenomenon, but will likely not be so lucky. You may enjoy calling me in January to say “welcome to Michigan”.

# Ohio Mosquito Control Association Meeting

Five members of MMCA traveled to Athens, Ohio, October 26-28, to attend the 2014 Ohio Mosquito Control Association's annual conference. Featured speakers at this year's meeting included the ever-eloquent Joe Conlon, AMCA Technical Advisor, who discussed the goal of putting a human face on mosquito-borne disease, and Roger Nasci of the CDC presenting two informative talks. MMCA's own Margaret Breasbois gave an enlightening presentation on integrated mosquito management with a slight emphasis on education.

Ohio's line-up of speakers and presented topics was quite impressive, and the association's hospitality was top-notch. MMCA members are encouraged to attend meetings and reap the benefits of developing informational networks with our neighboring states.



**Michigan Mosquito  
Control Association  
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**FALL**