



# Skeeter Scanner

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MMCA PUBLIC  
INFORMATION  
AND EDUCATION  
COMMITTEE



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

## President's Message

The first frosts of the season will soon be upon us and Michigan's mosquito season is slowly coming to an end. This is good news for our public health partners who have been diligently collecting mosquitoes for West Nile virus (WNV) surveillance, and investigating reported cases of disease. Unfortunately, the reporting and testing of travelers for Zika virus will continue through the colder months as residents plan their vacations away from the cold, and head to destinations in the Caribbean. Next year, many more health departments will be conducting mosquito surveillance for the vectors of Zika virus, and the MMCA will be involved in training staff to trap and identify mosquitoes. Given the increasing reports of *Aedes albopictus* activity in the region, it's good timing for increased mosquito collections. I'd like to thank the current MMCA board and the previous boards for helping to build strong relationships between mosquito control and public health.



We had a very warm and dry beginning to the season, and since those are important factors in influencing WNV in the Midwest, it started out looking like it might be another banner year for WNV activity. Luckily the weather cooperated, and we began to see some much needed precipitation across the region. However, arboviruses are always a risk in Michigan in the summer, and there was still substantial disease activity in animals and people. To date, 37 cases of WNV and 2 fatalities have been reported from 11 counties, and two cases of Eastern Equine Encephalitis virus were reported from 2 counties. A total of 51 positive mosquito pools were detected from six southern Michigan counties this year, and wildlife cases were reported from throughout the Lower and Upper Peninsulas. While Zika is the current "disease du jour," it is important to remind residents that there is risk for arboviruses every year in Michigan.

The Annual MMCA 7F Recertification Training is shaping up to be a big success again this year. Registration filled up very quickly with many applicators on the wait list. I've been involved in the training for the last several years, and I can personally attest that it is well worth the money and time. I would like to thank Doug Allen, the rest of the MMCA board and committee members, and all of the demonstrators and trainers who volunteer their time to educate our fellow mosquito control professionals.

The MMCA Planning Committee is working hard, so keep your eyes out for information on the 31<sup>st</sup> Annual MMCA Conference on February 1-2, 2017. The conference will be held at the Double Tree Hotel in Port Huron, and is bound to be another stellar event.

## Study Shows Mosquito Pesticides do not Cause Honeybee Mortality

LSU AgCenter researchers in the Department of Entomology found mosquito control done properly has minimal effects on the health of honeybees. The three-part study, funded by a 2013 grant from the U.S. Environmental Protection Agency, evaluated the effects of pesticides on honeybees.

“You have a lot of attention focused on caring for bees and keeping them healthy,” said AgCenter entomologist Kristen Healy. “They produce honey, but they’re also important because they pollinate crops worldwide.”

The project was a collaboration among scientists at the LSU AgCenter, the U. S. Department of Agriculture Honey Bee Breeding, Genetics and Physiology Research Laboratory in Baton Rouge, East Baton Rouge Parish Mosquito Abatement and Rodent Control and USDA agricultural engineers from Texas. Local beekeepers were also involved in the study.

The research included laboratory, semi-field and field components. AgCenter researchers conducted lab tests using specific insecticides that target mosquitos to find toxicity levels for bees. Research in the past focused on toxicity in a lab without real-world testing in the field. “We know the concentration that would kill a bee, but is it realistically going to get exposed to that concentration in the field?” Healy said.

After determining lethal concentrations, scientists conducted semi-field tests, where a truck sprayed six of the most common mosquito control insecticides toward pairs of cages containing bees and mosquitos. The cages were placed on poles from 50 feet apart to 300 feet apart, the typical distance insecticides can drift from spray trucks. “This is the highest possible label rate that mosquito control would ever use out of a truck, and we didn’t see any bee mortality, even at 50 feet,” Healy said.

Mosquito control products use extremely small doses that target mosquitos, and the chemicals break down within hours. “Mosquitos are 100

times more susceptible to these pesticides than bees are,” she said.

The third stage included field tests. Local beekeepers volunteered, half of them with hives in areas of frequent mosquito treatment, with the other half in areas without control.

Scientists found no differences in the mortality rates of bees in both groups. “These pesticide concentrations used out in the field are not high enough to kill bees,” Healy said.

Researchers also measured stress by analyzing indicator enzymes from the field-test bees. They found no difference in stress between the two groups.

Mosquito control agencies do not indiscriminately spray chemicals, Healy said. They use science-based research like surveillance, trapping and population counts while testing for pathogens like West Nile virus and Zika virus to plan targeted mosquito control.

Bees stay inside their hives during the night when mosquito controls are usually sprayed and forage during the day when chemicals have disappeared. Still, it’s important for beekeepers and mosquito control agencies to communicate frequently. “I’m happy that we’re not killing bees with mosquito control,” Healy said. “The exciting part was having people with both interests that were there every step of the way.”

Healy regularly gives presentations to the community, including beekeepers, who are understanding of the situation.

“They say I don’t like mosquitos, so if it’s not having an effect on my bees, I think I’d rather opt for protecting my family and pets against West Nile and Zika.”



## EPA Grants Extension of Experimental Use Permit for ‘*Wolbachia* Mosquito’

EPA has approved and expanded an existing experimental use permit (EUP) for *Wolbachia pipientis*-infected *Aedes aegypti* mosquitoes. *Wolbachia* are naturally occurring bacteria commonly found in most insect species, but not in the *Aedes aegypti*. The EUP was issued to the University of Kentucky’s Department of Entomology (UKDE) in October 2015 for limited testing in Fresno County, California. The updated EUP also authorizes testing to evaluate the *Wolbachia pipientis* bacteria’s effectiveness in suppressing and eliminating *Aedes aegypti* mosquitoes at particular sites in Fresno and Orange County in California and Monroe County in Florida.

*Wolbachia pipientis* are bacteria that generally do not occur in wild populations of *Aedes aegypti*. This strain of *Wolbachia* is extracted from *Aedes albopictus* embryos and microinjected into *Aedes aegypti* embryos. These male *Aedes aegypti* mosquitoes are shipped to testing sites where they are released and mate with wild-type *Aedes aegypti* females that do not carry *Wolbachia*. After mating, the bacteria prevents the new embryos from developing properly so the mosquitoes cannot successfully reproduce. As the *Aedes aegypti* mosquitoes are known to carry numerous diseases, including the Zika virus, it is important to note that information gathered under this EUP may lead to a new tool to help control mosquitoes that carry diseases.

In February 2016, EPA published a Notice of Receipt of the university’s application and took public comment. EPA concluded that the experimental work initially approved for the EUP in 2015 presented minimal risks to non-target organisms and the environment. The additional sites and extended time do not raise any new risk concerns for EPA.

Documents related to this EUP, including scientific assessments, are available in Docket [EPA-HQ-OPP-2015-0374](#) on [www.regulations.gov](http://www.regulations.gov). (EPA has issued, amended, and/or extended other experimental use permits using this same technology in another

mosquito species, *Aedes polynesiensis* or *Aedes albopictus* in 2012, 2013, and 2014. Information on those EUPs is available in Docket [EPA-HQ-OPP-2012-0181](#) and Docket [EPA-HQ-OPP-2013-0254](#) at [www.regulations.gov](http://www.regulations.gov).)

## Adult Mosquitoes Can Pass Zika to their Offspring: U.S. Study

By Julie Steenhuisen | CHICAGO

Adult female mosquitoes can pass the Zika virus along to their offspring, U.S. researchers said on Monday, a finding that makes clear the need for pesticide programs that kill both adult mosquitoes and their eggs.

The findings, published in the American Journal of Tropical Medicine and Hygiene, show that as with many related viruses, including dengue and yellow fever, Zika can be transmitted from female mosquitoes to their offspring.

Dr. Robert Tesh of the University of Texas Medical Branch in Galveston, Texas, a study co-author, said the fact that the virus can be passed along to mosquito offspring makes Zika harder to control.

Adult female mosquitoes can pass the Zika virus along to their offspring, U.S. researchers said on Monday, a finding that makes clear the need for pesticide programs that kill both adult mosquitoes and their eggs.



"Spraying affects adults, but it does not usually kill the immature forms - the eggs and larvae. Spraying will reduce transmission, but it may not eliminate the virus," he said.

Although Zika generally causes mild disease in adults, it is a major threat to pregnant women because it has been shown to cause the severe

birth defect known as microcephaly and other brain abnormalities.

The ongoing Zika outbreak was first detected last year in Brazil, where it has been linked to more than 1,800 cases of microcephaly, and has since spread rapidly through the Americas.

*Aedes aegypti*, the mosquitoes that carry Zika, lay eggs in small containers of water. Homeowners have been advised to dump out containers of water on their properties. When the water is dumped, the eggs cling in a ring around the water line, where they remain dormant until the next rain, when they can hatch.

Scientists studying Zika wanted to find out whether some of the offspring from these tropical mosquitoes might carry the virus, helping to perpetuate an outbreak during dry seasons.

To find out, researchers injected female *Aedes aegypti* mosquitoes raised in a laboratory with Zika. They were then fed, and within a week, they laid eggs. The team collected and cared for the eggs until they hatched into adult mosquitoes, and counted the ones that carried the Zika virus.

They found the virus present in one out of every 290 mosquitoes tested.

"The ratio may sound low," Tesh said, "but when you consider the number of *Aedes aegypti* in a tropical urban community, it is likely high enough to allow some virus to persist, even when infected adult mosquitoes are killed."

Tesh said the next step is to show that mosquitoes are actually passing Zika to their offspring in the wild.

Experts fighting Zika in the Wynwood neighborhood of Miami have announced aerial spraying campaigns using pesticides that kill both adult mosquitoes and mosquito larvae.

For homeowners in affected areas, Tesh advised people to dump standing water from containers on their property and scrub them thoroughly to remove eggs and larvae. They should also remove any objects from their yards that could collect water.

## Call for Nominations: MMCA Board of Directors



The success and strength of any association is determined by the actions and involvement of its members. With this in mind, the Michigan Mosquito Control Association is looking for members to serve on its Board of Directors. The following offices need to be filled at the annual meeting to be held in February 1-2, 2017. The following positions need to be filled:

**Vice President** - Serves a one-year term then succeeds to the office of president. A new Vice President is elected each year.

**Secretary**- Serves a two-year term with election to office on alternating years with the treasurer.

**Trustees**- Serves a two-year term with elections to office staggered so one or two new Trustees is elected each year. In 2017, one Trustee will be elected

The Board of Directors meets just after the annual meeting and then as needed scheduled by consent of any five members of the Board of Directors.

Elected Board members shall be limited to serving two consecutive terms in the same capacity.

Please contact Alicia Wallace at: [wallacea@baycounty.net](mailto:wallacea@baycounty.net) if you are interested in serving on the MMCA Board of Directors

**"Continuous effort- not strength or intelligence- is the key to unlocking our potential."**

Winston Churchill

## CAPC Changes Heartworm Guidelines due to Evidence of Resistance

DVM360 MAGAZINE

The Companion Animal Parasite Council (CAPC) has altered its guidelines after evidence of preventive-resistant *Dirofilaria immitis* strains was presented at the American Association of Veterinary Parasitologists Conference at the end of July in Chicago. Researchers have now identified heartworm isolates from the Mississippi Delta region that develop in adult dogs receiving routine monthly heartworm preventives.

At the conference, a number of parasitologists—including Byron Blagburn, PhD, of Auburn University, Dwight Bowman, PhD, of Cornell, and others—presented the findings of investigations funded by Novartis Animal Health, which has contributed \$1.6 million to date toward studying resistance. “Resistance has been demonstrated across the macrocyclic lactone (ML) product class,” writes Bowman in an introduction to a collection of the research abstracts. “All currently approved products have failed to prevent heartworm development in dogs when tested in experimentally induced infection models with Mississippi River Valley isolates.” These products include ivermectin, selamectin, milbemycin oxime and moxidectin.

This means treatment of heartworm-positive dogs should be immediate and aggressive, as noted in the newly revised [CAPC guidelines](#). The “slow kill” therapy sometimes prescribed by veterinarians is never appropriate, as it has been demonstrated that using this modality—repeated macrocyclic lactone administration over a period of time—increases the proportion of circulating microfilariae that possess resistance markers.

Parasitology specialists emphasize that evidence for resistance does not mean abandoning current protocols but following them even more rigorously. “The new evidence confirming heartworm resistance underscores the importance of protecting pets year-round without gaps in prevention,” Bowman says in a statement from CAPC. “Veterinarians also should continue to emphasize annual heartworm testing. In areas where heartworm is more prevalent or breaks are

appearing, testing every six months is recommended.”

While new strains may be preventive-resistant, CAPC says current products are still effective against many strains of heartworm and several control other parasites, including intestinal helminths, fleas and mites. “Preventives are still the best protection we have, and consistently administering them is key to maintaining pet health,” says CAPC board member Susan Little, DVM, PhD. Though the preventives cannot guarantee that infections will never occur, Little encourages veterinarians to “test dogs regularly to be sure they have not become infected, and when infections are identified in dogs, we have to treat whenever possible.”

The geographic spread of resistant isolates has not been determined, but CAPC says it will continue to monitor the evolving situation and modify recommendations to veterinarians as needed.

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## Michigan Mosquito Control Association

### 2017 CONFERENCE ATTENDANCE OPPORTUNITY GRANT

#### The Opportunity Grant mission...

To provide funding to reward a deserving individual with the opportunity to attend the 31st annual MMCA Conference.

This grant allows individuals with an active involvement or interest in mosquito control to attend this educational forum who may not otherwise have the opportunity to participate.

**Winner receives: Conference registration, 2-night hotel accommodations, and a Travel stipend**

FOR MORE INFORMATION AND AN APPLICATION FORM, VISIT THE MMCA HOMEPAGE

[WWW.MIMOSQ.ORG](http://WWW.MIMOSQ.ORG)

**Deadline November 1, 2016**

**31st Annual MMCA Conference**

**DOUBLETREE BY HILTON PORT HURON**

February 1-2, 2017

**Contact Awards Chairman:**

**Rebecca Brandt: [brandtr@baycounty.net](mailto:brandtr@baycounty.net)**

## Michigan Mosquito Control Association hosts 7F Training

On October 24<sup>th</sup>, the MMCA hosted a recertification training seminar for those wishing to renew their 7F license. Speakers came from Industry, the Mosquito Control Districts, Michigan Department of Health and Human Services, and Michigan Department of Agriculture and Rural Development. The morning sessions covered the information in the 7F manual, and the afternoon consisted of hands-on explanations of equipment used in mosquito control and disease detection. The attendees could select either 7F or Core credits.

Bay County Mosquito Control (BCMC) hosted the event. The presentations were given at the Community Building located next to the Bay County facilities, and the hands on demonstrations took place at the BCMC. Eighty-four applicators attended the event.



## 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
    - Professional involvement and contributions to community health and welfare

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 FOR EITHER AWARD: JANUARY 6, 2017**

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

## Zika Virus Can Persist for Months in Newborns, Case Study Suggests

by Molly Walker  
Staff Writer, MedPage Today

An infant born with microcephaly, but with an otherwise normal physical examination at birth, had evidence of the Zika virus in serum, saliva, and urine nearly 2 months after birth, a case report from Brazil found.

The mother of the male infant was potentially infected during her third trimester of pregnancy, and the baby was born at term (40 weeks) with microcephaly. Laboratory testing found evidence of Zika virus in the infant up through 2 months of age, and he began displaying neurological symptoms at 6 months of age, [Danielle B.L. Oliveira, PhD](#), of Universidade de São Paulo in Brazil, and colleagues, reported in a research letter in the *New England Journal of Medicine*.

The authors said that despite being born with microcephaly, the infant had a normal vision and hearing test, and analysis of cerebrospinal fluid was normal at birth, with no abnormalities detected during an initial physical examination. In fact, the infant showed "no obvious illness or evidence of any immunocompromising condition" on day 54 of life.

"If Zika is shown to persist as a threat to infected newborns long after in utero exposure, there are serious implications for monitoring and managing exposed babies, even if there are no clinical manifestations noted at birth," [Irwin Redlener, MD](#), of Columbia University Mailman School of Public Health in New York City, who was not involved with the research, told *MedPage Today* via email.

But similar to the findings in [a recent study](#), brain imaging revealed that the infant had reduced brain volume in the frontal and parietal lobes, with calcifications in subcortical areas. A polymerase chain reaction test was positive for Zika in serum, urine, and saliva at day 54 of life and positive for serum on day 67. The test was negative on day 216, although the authors noted that Zika-specific IgG titers were higher than in the first and second

samples -- potentially indicating that the infant had mounted an immune response to the virus.

"Prolonged viral shedding in the infant ... may have had a role in the damage the virus was able to incite," said [Amesh Adalja, MD](#), a spokesperson for the Infectious Diseases Society of America. "It will be important to conduct more research in this vein in order to determine how common prolonged shedding is and if it is associated with a worsened clinical course," he told *MedPage Today* via email.

At 6 months of age, the infant showed evidence of neuropsychomotor developmental delay, with global hypertonia, or spasticity, and spastic hemiplegia -- a constant state of contraction of muscles on one side of the body, often associated with cerebral palsy. This is also consistent with [recent research](#) showing a delayed onset of symptoms in some infants with congenital Zika virus infection.

The other interesting detail about this case was that not only did the mother appear to contract Zika virus later in her pregnancy, but she may have done so through "suspected" sexual transmission from the father. The authors reported that the mother stayed in São Paulo for the duration of her pregnancy, but the father traveled to northeastern Brazil. The father then had symptoms of Zika virus infection when the mother was 23 weeks pregnant, but she did not show symptoms until 26 weeks.

"This report provides evidence that a third trimester infection with Zika, which has been generally considered to be lower risk than earlier periods in a pregnancy, is not always benign and can lead to microcephaly," added Adalja.

- **Primary Source**

New England Journal of Medicine

[Source Reference: Oliveira DBL, et al "Prolonged shedding of Zika virus associated with congenital infection" \*N Engl J Med\* 2016; DOI: 10.1056/NEJMc1607583.](#)



# News From Around The Districts

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Midland County is very pleased to have received 88% support for our continued millage during the August 2016 primary election. We are approved for another four years of business as a result.

## MIDLAND

Bad news on the ongoing state forest drama. The Forest Stewardship Council, who do not reside in Midland County, do not pay taxes to support the mosquito control program, and whose children will not be subject to increased mosquito bites, have decided that MCMC will not be allowed to control adult mosquitoes on areas of state land near county residents. This outcome was not at all surprising, yet very disappointing. Next steps involve submitting an appeal to the FSC (not expected to result in a change of outcome) and work with the DNR to come up with an alternative arrangement.

After a dry and somewhat slow summer, we received a few rain events late in the season that kept us busy chasing *Aedes vexans*. The late rains caused us to extend the seasonal crew an extra week. Since then we have been wrapping up and getting equipment put away for the winter.

One of our seasonal technicians, Carl Bland, was recently honored by the Midland County Board of Commissioners. Carl was offered a significant amount of cash by a resident this season, which he was grateful for, but refused to accept. As he was working alone, it was his integrity that led him to do the right thing in accordance with County policy. This impressed his supervisors and the County officials so much that he was given the top honor among thirteen employees who received appreciation awards.

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## TUSCOLA

This spring was extremely crazy for us. Not knowing whether or not our new garage was going to be completed by our beginning date had everyone on edge. But we were able to get all the odds and ends tied together for the beginning of our season and were finally able to move into our new garage.

Overall we had a very good season here in Tuscola County. The dry summer made for a rather easy season and kept the mosquito population down. The ten inches of rain we experienced throughout July and August kept us on our toes as calls began to come in. We were able to stay on top of things and ended up road side fogging until the last week in September.

This year we sent down 560 pools to be tested by Michigan State University. Four pools came back positive for West Nile Virus. They were located in Vassar, Millington, Denmark, and Kingston townships. We did test five corvids this summer that all tested negative for WNV.

As we end the season, we will begin the process of winterizing vehicles and equipment. We are also looking forward to 7F Training on October 24<sup>th</sup> and the MMCA this winter.

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Another season is in the rear view, and the time to reflect is upon us. It was a great year in regards to mosquito nuisance; dry, warm (maybe even hot) conditions dominated much of the summer. This was quite a contrast and relief compared to the previous couple years of nuisance produced from wet, cool weather. Each season has its own unique weather which yields its own unique population of mosquitoes. Thankfully Zika vectoring mosquitoes are not a population present here in Michigan, however there was still quite a bit of Zika concern (and rightfully so given its impact from South America north into Florida) from the citizens of Saginaw County and the State.

Warm, dry weather is conducive to our endemic arbovirus amplification within mosquitoes and birds. Saginaw County's West Nile virus presence characterized an average year as detected in both birds and mosquitoes; collections found 8 crows and 4 mosquito samples positive for West Nile. The 2016 season started with a very successful aerial treatment of woodland spring mosquitoes; then dry weather predominated until August; heavy localized rainfall produced floodwater nuisance in portions of the County with areas of biting activity continuing through September and into October. Operations came to an end on September 30<sup>th</sup> as we began another fiscal year and our technicians returned to college. It is a bit bothersome to have mosquitoes biting into October. What ever happened to our September frost?

Our Education Department is back working in local schools and already has 145 classroom presentations scheduled. The Education Department has added 2 new "Tablets" to the education hands on activities; the multiple choice quizzes, and games that will be put on these can be updated regularly. We have also been working on updating the display we use for public events.

Household scrap tire collection continues to be popular within the County. We offered two week long tire drives and also accepted tires at our facility from May 1 – August 31. We collected a total of 4,585 tires this summer. Program costs were partially funded through the State of Michigan's Scrap Tire Cleanup Grant Program.

We are looking forward to the off-season where we look to incorporate all of what we learned this past season, and to do better in the next.

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The third quarter of 2016, which encompasses the bulk of the mosquito treatment season, started out dry, but ended wet with 4-7 inches of rain falling in four rain events that occurred from August 12-18. The western half of the county was hardest hit, but no area was spared. Needless to say, we saw a big spike in *Aedes vexans*, *Aedes trivittatus*, and *Psorophora ferox*. With daytime high temperatures in September averaging close to normal with cool evenings, complaint calls did not manifest and we were able to wrap up the season on September 27<sup>th</sup> without much fanfare. Clean-up and winterizing took place the next week.

Our second annual scrap tire drive was held August 20 where we recycled 483 tires as breeding habitats from the community.

Disease surveillance efforts continued through September. Four hundred six pools (or groups of mosquitoes) were assembled with two testing positive for West Nile Virus (WNV) – one in Williams Township and one in Monitor Township. These were mosquitoes that were collected in CDC traps, New Jersey light traps, or gravid traps. Two of the eleven Crows or Blue Jays tested this season were WNV-positive.

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Save the Date:

# MMCA Conference

February 1-2, 2017



800 Harker Street  
Port Huron, MI 48060  
(810) 984-8000



**Michigan Mosquito  
Control Association  
P.O. Box 366  
Bay City, MI 48707**

## Fall