



Skeeter Scanner

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THIS ISSUE:

President's Message

- ➔ Organic vs. Conventional Foods- The Science
- ➔ Snakes Possible Bridge Vector for EEE
- ➔ West Nile virus – Kidney Disease
- ➔ EPA New Directory on Mosquito Control
- ➔ Mosquitoes Avoid Malaria Nets
- ➔ Single Dose Malaria Cure
- ➔ WNV Activity in Michigan 2012
- ➔ Around the Districts

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MMCA PUBLIC
INFORMATION
AND EDUCATION
COMMITTEE



www.mimosq.org

This year was a reminder that there really is no such thing as a normal mosquito season. First the year started with extremely warm conditions in March which resulted in the hatching of spring *Aedes* mosquitoes 2-3 weeks earlier than our state has ever experienced in past years. The end of the season was also unprecedented with a very large brood of floodwater mosquitoes which was also later than our state has ever experienced in the past. Although our records only go back 36 years this expanding of the mosquito season, if it continues in the future, will certainly result in changes to how we operate.



On another subject, it has been difficult to sit back and watch the weekly increase of human West Nile virus cases in the greater Detroit area and Grand Rapids and know that nothing is being done to control the mosquito vectors in these locations. The news releases promoting using repellants, wearing long sleeve shirts and pants, and avoiding areas where you encounter mosquitoes, just doesn't set very well with me. I know the implementation of mosquito control activities in these areas could significantly reduce human West Nile virus activity. Regretfully, there is not the political will or the funding to do anything except wait for autumn and the mosquito season to end. The MMCA must be vigilant, and ready to support any efforts to establish mosquito control throughout the state when the opportunity arises.

Finally, please be reminded that we are currently working on the agenda for this year's annual conference so if you have some ideas for presentations please let me know within the next month. Additionally, this year's conference will be just a couple miles from the Bay County Mosquito Control facility which will allow us the opportunity to provide a Field Day on Thursday afternoon. This will give interested participants a chance to review a vast array of operational equipment and talk to the individuals who use it on a daily basis. I would encourage all of you to sign up for the Field Day and take advantage of this hands-on learning experience.

Randall G. Hopper

More Input on Organic vs. Conventional Foods (or what do you do if you don't agree)

September 20, 2012

<http://www.acsh.org/more-input-on-organic-vs-conventional-foods/>

What to do if you don't like/disagree with the findings of a scientific study? For some, it appears that the answer is to start a petition to have the study retracted, and to accuse the researchers of bias and being in the pay of nefarious industry concerns.

After days of heated reaction to a study published about organic foods, north of 2,900 people have signed the petition, at change.org, calling for the paper to be withdrawn.



Here are the nuts and bolts of [the report](#) by [Stanford University](#) scientists, which was [published in the Annals of Internal Medicine](#):

The researchers pooled together studies addressing the health benefits of organic and conventionally grown foods. Nutritionwise, they didn't find many differences in the more than 200 reports they looked at. But they did find some evidence of higher blood levels of pesticide residues among children who ate conventionally grown food, and they noted that while organic and conventionally grown food put people at equal risk for food-borne illnesses, antibiotic-resistant microbes are more commonly found among conventionally reared chicken and pork.

Insidious stuff!

Now to [the change.org petition](#), which states in part: "The fatally flawed Stanford study claiming that organic food is the same as conventional ... failed to examine key food issues such as the use

of GMOs, high-fructose corn syrup, mercury in the food supply, and countless other factors. Stanford University has also been found to have deep financial ties to Cargill, a powerful proponent of genetically engineered foods and an enemy of GMO labeling Proposition 37."

And elsewhere: "It is essential that we make enough waves within the media to force Stanford and the mainstream media to issue a retraction."

In the moments left before our appointment to be tarred and feathered and run out of town on a rail, a little review:

The article focused specifically on health aspects of organic food versus conventional food; in an interview, the first author said that she and the senior coauthor, both doctors, often get asked by their patients if eating organic food is healthier, so they decided to look at it.

The scientists weren't studying genetically modified foods (though if GMO foods were in the conventional data, one might think that GMO-caused health factors would have revealed themselves in the results). And they weren't studying high-fructose corn syrup -- they were only reviewing fruits, vegetables, eggs, grains, dairy, poultry and meat. Not processed foods.

The article, in other words, wasn't about the entirety of everything that people think is wrong about the way our food is grown and produced today. It wasn't even about every type of difference between organic and conventionally grown food.

Snakes Possible Bridge Vector for EEE

Snakes in the wild serve as hosts for the deadly mosquito-borne eastern equine encephalomyelitis virus (EEEV), possibly acting as a "bridge" to the next season, according to researchers studying endemic areas in the Tuskegee National Forest in Alabama. This sets the stage for mosquitoes feeding on the infected snakes -- primarily in the early spring -- to become virus carriers. Scientists have been puzzled as to how the virus survived a harsh winter. With this new link established in the transmission cycle, a viable strategy to counter the virus may be at hand.

The findings were published online in the American Journal of Tropical Medicine and Hygiene and will be published in the December 2012 print issue.

While previous studies demonstrated that snakes experimentally infected with EEEV in laboratories could harbor the virus in their blood through hibernation, this is the 1st evidence documenting wild-caught snakes with EEEV already circulating in their blood. "This study confirms that the snakes carry the live virus across seasons," said study co-author Thomas R. Unnasch, Ph.D., of the University of South Florida's Global Health Infectious Disease Research Program. "So after hibernating all winter, when they emerge in the sun in the spring, they still have the virus in their blood ready to share with a new crop of mosquitoes, which can then spread it on to other animals."

"EEE is one of the most deadly viruses that's endemic to the United States, and what this result allows us to do is to start thinking about early season interventions to basically eliminate the virus transmission early in the season and interrupt it before it gets going, before it will be a threat to human beings later on in the season," he said.

Until now, the mystery of how the virus survived the winter has been an outstanding question, because the virus has appeared in the same locations in several Northeastern U.S. states from year to year. "There are no mosquitoes there in the winter and not many birds, and there has never been evidence that mosquitoes can carry the virus over the winter," Unnasch said.

For their research for this study, scientists from the University of South Florida and Auburn University wrangled snakes for blood samples from an area in the Tuskegee National Forest where EEEV has circulated for years. They found that the infected snakes, mostly cottonmouths, hibernate the virus in their blood during winter. They also discovered that the virus in snakes peaked in April and September. Unnasch said when the major transmission agents, migratory birds, leave the area in the fall, the mosquitoes turn to the snakes -- feeding through the eye membranes of the vipers, not through their tough

skin -- which is why infection rates peak in September. He added that there is no research on whether the virus can be transmitted by a snake bite, but they plan to use defanged snakes in their next experiments."

Unnasch and his colleagues believe that the virus can be stopped before it becomes a threat. Further study could prove whether early season interventions could be useful in eliminating infections in the summer, which may involve humans. "We'd like to test this experimentally by doing some early season insecticide treatments for mosquitoes in Florida," said Unnasch, adding that according to the CDC, his home state has far more cases of EEE virus than any other.

West Nile Virus - Kidney Disease

Patients who have a history of infection with West Nile virus (WNV) should be screened for chronic kidney disease (CKD), after US researchers have found varying degrees of the life-threatening disease in 40 percent of those patients who also contracted the mosquito-borne illness at an earlier time.

Researchers from 3 organizations -- Baylor College of Medicine, Texas Children's Hospital and The University of Texas Health Science Center -- studied 139 patients who had been infected with West Nile virus.

The teams used the Kidney Disease Outcomes Quality Initiative (KDOQI) criteria, based on the Modification of Diet in Renal Disease (MDRD) formula and urinary abnormalities, to assess risk factors and biomarkers of the disease.

Publishing the findings in the online edition of PLoS ONE, the team found that 2 in 5 of the West Nile patients also had a prevailing form of kidney disease.

"We are in the process of researching the relationship between West Nile virus infection and kidney disease, but this study now allows us to understand the prevalence and progression of kidney disease in those previously infected with West Nile virus," said study leader Dr. Kristy Murray, associate professor of pediatrics at BCM and Texas Children's.

At the time of the study, about 83 per cent of the patients were 4 - 9 years post-infection. Based on the KDOQI initiative, 40 per cent of the participants showed evidence of CKD, with 10 per cent having Stage III or greater and 30 per cent with Stage I or II.

The researchers further found that 26 percent of patients had proteinuria and 23 percent had hematuria. Plasma NGAL levels were also elevated in 14 per cent of the patients.

"An estimated 2 million Americans have been infected with West Nile, and we advise physicians to screen them for potential kidney disease, because if you catch it early, then the person can be monitored and treated should the disease progress," said study coauthor, Melissa Nolan, of the National School of Tropical Medicine at BCM.

CKD is divided into 5 stages. The first 2 stages are mild, and the 3rd stage is a moderate form. Stages 4 and 5 are the most severe forms and are usually irreversible, often resulting in dialysis or transplantation.

"Stage 3 is a tipping point where patients either recover or progress onto later stages," said Nolan, noting that because there are no symptoms in the early stages of kidney disease, many people do not even know they have it.

Whereas traditional risk factors associated with kidney disease include diabetes and hypertension, the researchers found these risks were typically not associated with kidney disease found in the study participants, giving the disease a stronger connection to WNV [infection] in the study group.

The researchers will next look at the relationship between WNV infection and CKD.

"We believe we now have good evidence towards an association. There are many long-term and serious health effects related to infection with this virus, and we want to strongly encourage people of all ages to take precautions against mosquito bites," Murray said.

EPA Releases New Resource Directory on Safely Controlling and Preventing Mosquitoes

The EPA has reorganized its resources about controlling mosquitoes and preventing bites on its website. Though the summer is winding down, the EPA advises the public that mosquitoes can still present a serious risk to public health.

The new resource directory includes simple, do-it-yourself prevention methods such as removal of standing sources of water where mosquitoes breed, easy tips to prevent being bitten, how to use insect repellents safely, and information about pesticides commonly used in mosquito control programs.

The agency understands that Americans are concerned about recent increases in mosquito-borne diseases across the United States, especially the West Nile virus, and is committed to helping people understand how they can be more vigilant in protecting themselves from risks posed by mosquitoes.

EPA's new mosquito control resource directory can be found here:

www.epa.gov/mosquitocontrol/.

Mosquitoes Change Habits to Avoid Anti-Malaria Nets

After two African villages started using mosquito nets to fight malaria, the local mosquitoes seemed to change their biting habits to avoid the barriers, according to a French study.

Insecticide-treated bed nets are considered a key weapon in the global fight against malaria.

In the study, which appeared in the *Journal of Infectious Diseases*, French researchers examined mosquito behavior before and after all households in two villages in Benin were given insecticide-treated nets.

They found that mosquitoes seemed to change their hours of "peak aggression" from 2 a.m. or 3 a.m. to around 5 a.m. three years after nets were put up. And in one village, the proportion of mosquito bites inflicted outdoors rose.

Get the latest information on Integrated Mosquito Management

The Michigan Mosquito Control Association will be sponsoring a full day training course for certified pesticide applicators in mosquito pest management. This course has received 8 recertification credits from the Michigan Department of Agriculture. If you would like to get all of your required recertification credits for category 7F (Mosquito Pest Management) in one day – this is the course for you.

This course will involve 4.5 hours of lectures given by instructors from the MMCA and three hours of hands-on training dealing with pesticide safety, community mosquito abatement treatment techniques, mosquito surveillance, selection and calibration of mosquito control equipment and much more. Recent developments with regard to pesticide application regulation will be discussed.

This is one training course that you don't want to miss. If you would like to take advantage of this opportunity, send in the enclosed registration with payment or call/email Tom Wilmot (see contact/payment information below). Seating is limited and guaranteed seating will be on a first-come basis. Preregistration is required. (Minimum of 8 registrants is required to hold the course).

Tuesday, October 23, 2012 from 8:30 to 4:30 pm

Training Session Location

Bay County Mosquito Control
810 Livingston Ave
Bay City MI 48708
(989) 894-4555

Contact

For Questions Please Contact
Tom R. Wilmot, Ph.D
(989) 832-8677
twilmot@co.midland.mi.us

Payment Method

Make check payable and mail to:
Michigan Mosquito Control Association
PO Box 366
Bay City MI 48707
OR
To use **PayPal** or credit card go to
www.mimosq.org/conference.htm

Cost

\$60 (includes lunch and snacks)



2012 Mosquito Control Training Session Registration Form

Name _____

Agency/Firm _____

Address _____

City _____

State _____

Zip _____

Phone _____

Fax _____

E-mail _____

Website _____

8:30 am - Introduction to Mosquito Biology & Integrated Mosquito Management

Randall G. Knepper, Saginaw County Mosquito Abatement Commission

Mr. Knepper is a graduate of Central Michigan University and has been active in mosquito control in Michigan since 1978. Currently he is the Director of the Saginaw County Mosquito Abatement Commission. He is a founding member of the Michigan Mosquito Control Association and has served 3 terms as President of the Association. He has also been a contributing author for over 20 articles for American Mosquito Control Association publications.

9:00 am - Characteristics Of Common Mosquitoes

Douglas W. Allen, Midland County Mosquito Control

Mr. Allen has worked with Midland County Mosquito Control since 1986 as a Technician, Foreman and is currently the Biologist. He received his Bachelor's degree in Fisheries & Wildlife Management from Lake Superior State. He is currently Vice-President of MMCA.

9:15 am - Mosquitoborne Disease

William W. Stanuszek, Saginaw County Mosquito Abatement Commission

Mr. Stanuszek is a graduate of Michigan State University has experience in Integrated Pest Management since 1998. He started out working for Midland Mosquito Control as a Biology Tech in 1998, then became the Field Biologist for Midland County's Gypsy Moth Suppression Program. He returned to mosquito control in 2005 with the Saginaw County Mosquito Abatement Commission as their Biologist.

9:45 am - Surveillance

Mary J. McCarry, Bay County Mosquito Control

Ms. McCarry is a graduate of Saginaw Valley State University, receiving both a B.S. in Biology and certification in Elementary Education. She has worked as a Biologist with Bay County Mosquito Control since 1990 and has been an active member of the MMCA, serving as Secretary, Treasurer, Trustee, and President. She is currently chairman of the Finance Committee and Treasurer.

10:15 am - Break

10:30 am - Regulatory Concerns

Michigan Department of Agriculture & Rural Development

11:00 am - Mosquito Control Materials & Label Review

Rebecca J. Brandt, Bay County Mosquito Control

Ms. Brandt is a graduate of Central Michigan University with a degree in Interpersonal and Public Communication. She has been a Field Supervisor for Bay County Mosquito Control since 2002. She is currently chairman of the 2013 Planning Committee.

11:15 am - Methods For Evaluating Insecticide Use

Randall G. Knepper, Saginaw County Mosquito Abatement Commission

Mr. Knepper is currently the President of Michigan Mosquito Control Association.

11:30 am - Larviciding Techniques & Equipment

Charles E. Dinsmore, Midland County Mosquito Control

Mr. Dinsmore has a Bachelor Degree from Saginaw Valley State University. He worked for Saginaw-Bay Mosquito Control from 1978-1984 as a Technician, Mechanic, and Foreman. Since 1984 he has been the Operations Supervisor for Midland County Mosquito Control. He is currently chairman of the Awards and Recognition Committee.

12:00 pm - Adulticiding Techniques & Equipment

Thomas J. Putt, Bay County Mosquito Control

Mr. Putt is the Director of Bay County Mosquito Control, a role he has had since 1984. Prior to that, he worked 1 year as a Seasonal Employee and 6 years as a Foreman for the Saginaw-Bay Mosquito Control Commission. He is a graduate of Michigan State University and has been very active in the MMCA serving as - President (4 terms), Vice-President, Trustee, and as a member of various committees.

12:30 pm - Commercial Barrier Treatment

David E. Driver, Univar USA

Mr. Driver has been with Univar USA for 18 years.

1:00 pm - Lunch (provided)

1:30 pm - 4:30 pm - Hands On Demonstrations:

Equipment, Surveillance, Residual Treatment, Resistance, AIMS

University of Cape Town Researchers Believe They Have Found a Single Dose Cure for Malaria

This was announced by researchers that have been working on this compound, from the aminopyridine class, for several years. Unlike conventional multidrug malaria treatments that the malaria parasite has become resistant to, Professor Kelly Chibale and his colleagues now believe that they have discovered a drug that over 18 months of trials "killed these resistant parasites instantly".

Animal tests also showed that it was not only safe and effective, but there were no adverse reported side effects. Clinical tests are scheduled for the end of 2013.

If this tablet is approved in coming years, this achievement will surely usher in a new age for science in Africa. It will save millions upon millions of lives on the continent, helping avoid at least 24 percent of child deaths in sub-Saharan Africa. Professor Chibale proudly explains: "This is the first ever clinical molecule that's been discovered out of Africa, by Africans, from a modern pharmaceutical industry drug discovery program. The potent drug has been tested on animals and has shown that a single oral dose has completely cured those infected with malaria parasites."

This "super pill" could potentially cure millions of people every year, and save the lives of over one million people from around the world each year. This "cure" will most likely save health care systems throughout the developing world billions of dollars and open new areas for development and settlement.

The South African Science and Technology Minister Naledi Pandor elaborates: "The candidate molecule is novel, potent, and has the potential to have a significant impact on global malaria control and eradication. This is a powerful demonstration of how much can be accomplished when open-minded researchers come together for the sake of the greater good of humanity. The discovery that we announce today is a significant victory in the battle to alleviate the burden of disease in

Africa. Clearly the war on disease is not yet won, but I am excited by the role that our excellent scientists have played in finding a potential single-dose cure for malaria and possibly preventing its transmission. South Africa in general had built considerable strength in clinical research over the past decade. The main focus had been on HIV/Aids and TB. This development had occurred together with significant growth in the basic sciences that underpinned infectious disease research."

West Nile virus (WNV) Activity in 2012

Reported WNV disease cases:

As of October 5, 2012, there have been **185 human cases of WNV disease** reported from 19 Michigan counties. Of these cases, 136 (74%) were classified as neuroinvasive disease (e.g., meningitis, encephalitis, acute flaccid paralysis) and 49 (26%) as non-neuroinvasive disease. To date there have been **ten fatalities** among reported cases of WNV in Michigan. Dates of illness onset for disease range from July 6 – September 22.

Presumptive viremic blood donors:

A total of **36 WNV presumptive viremic blood donors** have been reported in Michigan. Ten donors were from Kent County and ten donors were from Wayne County including one resident from the City of Detroit. Other counties with positive donors include Ingham, Jackson, Livingston, Macomb, Mason, Oakland, Ottawa and Washtenaw. Most people who are infected with WNV do not develop an illness but virus might be temporarily present in their blood. These asymptomatic but infected people are detected through routine blood donor screening, which provides an important early warning of WNV activity in an area.

Mosquito pools tested:

5,564 mosquito pools tested for arbovirus infection so far in 2012. Twenty-three pools have tested positive for WNV.

Comparison to 2011 data:

The onset of 2011 human WNV cases came 2 days later than in 2012. The current 185 cases is the highest number of cases reported for this time of year since the 2002 West Nile virus outbreak.



News From Around The Districts

BAY

The third quarter of 2012, which encompasses the bulk of the mosquito treatment season, surely had its extremes. A mostly hot, dry June and July gave way to record rainfall that fell from August 8-10 that produced a bumper crop of *Aedes vexans* by the end of August – just in time for the Labor Day weekend! Phones were ringing off the hook beginning August 27 with a record 315 phone calls received from Bay County residents reporting large mosquito populations. The following day saw 237 phone calls logged; calls continued over the next two weeks, but the number of calls continued to gradually drop. September saw very little rain coupled with cooler temperatures, so the season ended without much fanfare! The last official treatment day was September 26; clean-up activities took place during the final week of the month.

Our second annual scrap tire drive was held September 29 designed to rid the county of thousands of breeding habitats. Nearly 1,000 tires were collected from Bay County residents.

Disease surveillance efforts continued through September. Two hundred eighty-three pools (or groups of mosquitoes) were assembled with 5,495 total females (mainly *Coquillettidia perturbans* and *Culex* mosquitoes). These were mosquitoes that were collected in either CDC traps, New Jersey light traps, or gravid traps. Last year we saw a small resurgence of disease activity in Bay County and statewide, but West Nile Virus was detected at even higher levels in 2012. Five mosquito samples from 5 unique locations as well as 6 birds (5 American Crows and 1 Blue Jay) tested positive for West Nile Virus. The mosquito samples were reported from Bangor Township (2), Pinconning Township, Auburn, and Bay City east. The birds were discovered in Hampton Township, Frankenlust Township, Bay City (both east and west sides), Bangor Township, and Kawkawlin Township. There are still thirty-one mosquito samples at Michigan State University whose results are pending.

Two new four-wheel drive trucks were purchased from Garber Chevrolet in Midland. They arrived too late to be put into the rotation for the 2012 season, but are currently being equipped for next season.

TUSCOLA

At this time, we are putting the finishing touches on another season. Equipment is being stored, inventories performed, and data collected and reviewed. In response to heightened arbovirus activity, our trucks were on the roads until September 28. Owing to some heavy rains in August, we also had some late hatches of nuisance mosquitoes to deal with.

Our disease surveillance produced two positive (WNV) mosquito pools. In-house testing of birds discovered no evidence of infection. Statewide, WNV human cases reached levels not seen since 2002. Even though mosquito populations were lower than normal for most of the summer, this pronounced level of arbovirus amplification kept us alert.

Rainfall totals were, once again, well below normal. Outside of that aforementioned event, this kept things fairly quiet. Not what we feared would be the case when pupae were being found before our seasonal staff had reported. Now, however, a sense of calm is returning. Very soon, the 2013 season will occupy our thoughts, and the cycle will renew.

For most of the summer weather conditions were hot and dry. Conditions changed in late summer with significant rainfall making this the wettest August since our program was started in 1977. A large brood of floodwater mosquitoes started making their presence known on August 24th. Unfortunately, this hatch coincided with much of our seasonal staff returning to college which presented us with some unique staffing challenges. Mosquito populations had significantly declined by late September and our mosquito control activities officially ended on September 25th.

It has been a very active year for West Nile virus activity in Michigan; however in Saginaw we only had West Nile detections in 6 mosquito pools and 4 crows. Two of the mosquito detections were on the Shiawassee National Wildlife Refuge which should make this year's permitting process go smoothly.

It should be noted that this summer we collected quite a few *Cx. erraticus* adult mosquitoes. Typically, the northern edge of this species' range is the southern border of Michigan. Time will tell if this species will become a common collection in our mosquito traps.

After some modifications we were able to successfully install the hardware of our Automatic Vehicle Location system into one of the mopeds we use for catch basin larviciding. This allowed us to not only monitor the moped but also provide coordinates for all catch basin applications that can be used in future mapping projects.

It was a busy summer for our Education Department, along with the regular summer events at the county parks and Children's Zoo; they also attended an event at the Mid-Michigan Children's Museum, Consumers Family Day, a Safety Day sponsored by Old Navy, and the Saginaw County Fair. Now that school has started, we are back working in local schools and already have 52 classroom presentations scheduled.

This summer our tire collection program ran from May 1 – August 31; a total of 12,422 tires were recycled this year. Due to funding cuts from the Saginaw Solid Waste Committee we reduced staffing for tire collection from 4 to 2 and also stopped accepting tires earlier this year by ending the program in August vs. the end of September as in past years. We also hosted an e-waste recycling day on September 12th in cooperation with the Saginaw County Dept. of Public Health and the Mid Michigan Waste Authority.

As with much of the State, Midland County dealt with West Nile virus again this summer. We had several dead crows and a few positive mosquito pools show up at the end of July. After an aggressive response including catch basin treatment, ULV adulticiding in the vicinity of any positive samples, public awareness announcements and continued surveillance, virus isolations declined steadily over the month of August. Thankfully, no human cases were reported from Midland County.

In addition to the West Nile virus concerns, July and August rains produced healthy waves of floodwater mosquitoes, especially in the southeast quadrant of Midland County. After a very quiet spring and early summer, everyone from the office staff to the field crews to the supervisors had to make a rapid transition to full-speed operations. Mosquito control field operations have now been completed for the year, though. Supervisory staff and our new mechanic, Dave Taylor, are in the process of repair, maintenance and winterization of equipment and facilities.

Save the Dates! We look forward to seeing you all at the Michigan Mosquito Control Association Conference February 6 & 7 in Bay City. The American Mosquito Control Association's 2013 conference will be held in Atlantic City, NJ February 24 - 28.

Have a great winter all.

Kenley Farrel Memorial Scholarship

**“Pesticide Resistance: Is There a
Potential Public Health Disaster?”**

Sponsored by: Hatfield's Spraying Services
& MMCA.

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

The deadline for applications is November 1st, 2012.

A scholarship application form can be found at:

<http://www.mimosq.org/PDF/ScholarshipApplication2012.pdf>

William J. Lechel, II Memorial Scholarship 2013 Annual Student Paper Competition

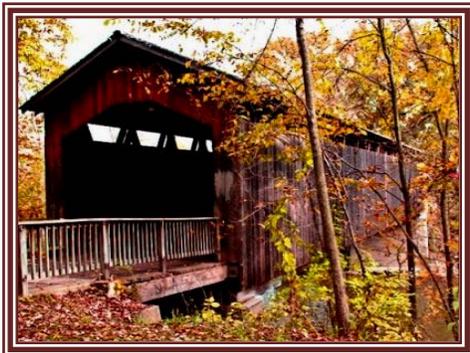
Sponsored by: Advanced Pest Management & Clarke

The William J. Lechel, II, Memorial Scholarship is a student presentation competition held in conjunction with the Michigan Mosquito Control Association Annual Conference. College students entering this competition will present findings from their research or a synopsis of existing research at the Annual MMCA Conference this year to be held at the DoubleTree by Hilton in Bay City.

Presentations on mosquitoes in particular are preferred, but related research may include information in health or pest-related fields; insects, insect control, weather, Lyme Disease, science education, etc. A total of 15 minutes will be allowed for each presentation.

The deadline for applications is November 15th, 2012.

Complete entry information and entry forms are available at:
<http://www.mimosq.org/PDF/LechelStudentPaperCompetitionApplication2013.pdf>



Fall

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