



Skeeter Scanner

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INFORMATION
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COMMITTEE



www.mimosq.org

MMCA will soon celebrate its anniversary – 25 years of educational efforts devoted to mosquitoes, mosquito-borne disease, and mosquito control in Michigan. Many of our devoted members have witnessed a quarter century of leadership, partnership, dedication, and determination by a steady corps of talented individuals across the State and beyond. Friendships have been formed that will last a lifetime. It has been a great journey with days ahead that are equally promising.



When MMCA was founded in 1986, it was through the efforts of a handful of individuals who dared to pursue this worthy cause. And since that time a long line of devoted and talented people have been passionate about understanding mosquitoes and mosquito control. Innovation has led the way as many can attest – mosquito control has come a long way in these past years. For those who attend the February conference, you'll be treated to a commemorative look at the MMCA's history by way of a presentation, fittingly by Randy Knepper, who has been on board the whole while.

After the February annual conference, we'll find ourselves in the midst of our 25th year, so we're hoping to showcase our rich history at this anniversary conference. Like others, I look forward to an agenda ripe with great presenters, who'll be led off by our keynote speaker, Dr. Frank Richards of The Carter Center.

Hopefully, you've all had a chance to look over and offer comments on the NPDES permit. Jeff Fischer, MDNRE, will be another of our speakers at the conference and will no doubt enlighten our members about how the final draft will look. We can only hope MDNRE will take our comments seriously and make adjustments to the latest draft before April 1, when the general permit takes effect.

It is with pride that I've served this past year as President of the MMCA. I'm humbled to soon be on the list of past officers of this association who have worked over the years to coordinate MMCA activities. I can honestly say that I have thoroughly enjoyed working with the other Board members and committee chairpersons. I would like to thank all of you for the support you've provided me over the past year and I would like to wish the very best of luck to our incoming President, Dr. Mike Kaufman.

Mary J. McCarry

The EPA Permittorium

The Wall Street Journal

The scale of the EPA's current assault is unprecedented, yet it has received almost no public scrutiny. In the last two years the agency has proposed or finalized 29 major regulations and 172 major policy rules. This surge already outpaces the Clinton Administration's entire first term—when the EPA had just been handed broad new powers under the 1990 revamp of air pollution laws.

Another measure of the EPA's aggressiveness are the six major traditional pollutants that the agency polices, such as ozone or sulfur dioxide. No Administration has ever updated more than two of these rules in a single term, and each individual rule has tended to run through a 15-year cycle on average since the Clean Air Act passed in 1970. Under administrator Lisa Jackson, the EPA is stiffening the regulations for all six at the same time.

The hyperactive Ms. Jackson is also stretching legal limits to satisfy the White House's climate-change goals, now that Senate Democrats have killed cap and trade. The EPA's "endangerment finding" on carbon is most controversial, but other parts of her regulatory ambush may be more destructive by forcing mass retirements of the coal plants that provide half of America's electricity.

A case study in the Jackson method is the EPA's recent tightening of air-quality standards for sulfur dioxide. The draft SO₂ rule was released for the formal period of public comment last December. Yet the final rule published in June suddenly included a "preamble" that rewrote 40-odd years of settled EPA policy.

The EPA has heretofore measured the concentration of pollutants in the ambient air by, well, measuring the concentration of pollutants in the ambient air. The preamble throws out this sampling and ultraviolet testing and substitutes computer estimations of what air quality might be. The EPA favors modeling because it can plug in the data and assumptions of its choosing, like how often a power plant is running at maximum capacity. Gaming the models will allow the agency to punish states and

target individual plants, even if actual measurements show that SO₂ is under the new EPA standard.

The EPA is within its legal discretion to reinterpret clean-air laws—but not without any prior warning, and the preamble surprise violates years of case law about federal rule-making. Worse, the agency hasn't gotten around to detailing how the models should be built or how the analysis must be conducted. Without any ground rules for approval, the permits required for any major energy or construction projects can't be issued.

The uncertainty created by the SO₂ rule and similar rule-makings has resulted in a near-total freeze on EPA permits, imposing a de facto project moratorium that will last for the next 18 months at minimum. North Dakota, Texas, Louisiana, South Dakota and Nevada are already suing the EPA because of the restrictions they now face on their "ability to permit new sources or expand existing sources," and many more states are expected to join them.

The same goes for the EPA plan to require "maximum achievable control technology" on a plant-by-plant basis to nearly every coal- or oil-fired utility in the country to limit pollutants like mercury. The EPA started writing that rule while the data that will supposedly inform its decision were still being collected. Then there's the upcoming "boiler rule," which the EPA's lowball estimate says will impose \$9.5 billion in new capital costs on manufacturers, paper mills, hospitals and the like. There are so many others.

The electric industry in particular is being forced to choose between continuing to operate and facing major capital expenditures to meet the increasingly strict burden, or else shutting down and building replacements that use more expensive sources like natural gas. Either way, the costs will be passed through to business and consumers as higher rates, which is the same as a tax increase. The general consensus is that as much as a third of the U.S. coal-fired fleet will be retired by 2016, costing north of \$100 billion—a consensus that includes an important federal advisory agency, as was written last month in "The Unseen Carbon Agenda."

Ms. Jackson responded to that editorial in a letter that waved off any criticism of her industrial policy as merely opposition to "common-sense efforts to reduce harmful pollution." And it's true that some of these costs might be justified if they resulted in real environmental improvements like less acid rain.

Yet return to sulfur dioxide: SO₂ emissions fell by 56% between 1980 and 2008, despite a 70% increase in fossil fuel-based electric generation over the same period. With current levels so low, the EPA's own 168-page analysis estimates that the direct benefits of the new SO₂ regulations will amount to all of \$12 million nationwide in 2020. Liquidating the EPA budget would yield better returns.

At least 56 Senators in next year's Congress are on record supporting bills that would freeze the EPA's carbon regulation for a time or strip the agency of its self-delegated powers. But the EPA is still pursuing the same agenda through other means, harming business expansion, job creation and economic growth. A key task for the next Congress will be to start pushing back.

Malaria Deaths in India May be Much Higher than Estimated

A new study claims that malaria kills nearly 13 times more Indians than previously estimated. If confirmed, the findings could call into question the effectiveness of the government's efforts to stem the parasitic disease.

"Adult and Child Malaria Mortality in India: A Nationally Representative Mortality Survey" <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2810%2960831-8/abstract> published in the British medical journal the Lancet last month claims to have investigated tens of thousands of deaths in more than 6,500 areas of India from 2001 to 2003.

Using this data, the authors conclude that more than 200,000 people from 1 month of age to 70 years old die each year due to malaria -- a figure higher than the estimated toll of 15,000 by the World Health Organization.

The data were collected by about 800 non-medical staff trained by the registrar general of India, who

interviewed relatives to assess each death, a method called verbal autopsy. This information was then sent to at least two of 130 collaborating physicians trained to identify the cause of death.

The study, co-funded by the U.S. National Institutes of Health, asks WHO to "reconsider the low estimate of malaria deaths worldwide." Prabhat Jha, a professor with the Center for Global Health Research and one of the study's lead authors, was quoted in an Indian newspaper saying the U.N. agency's methodology was flawed as it counted only patients who tested positive at a hospital setting. "Most of those who reach a hospital with malaria do get treated," he said. "Those who die are the ones who don't reach a hospital."

The study has spurred controversy. Dr. Nata Menabde, WHO's top official in India, said she accepted the limitations of current estimation methods but questioned the new higher estimates since the verbal autopsy method were not suited to measuring malaria, an illness that has several symptoms in common with other diseases and can be misinterpreted.

The study, if true, could mean that the anti-malaria program run by the government is inadequate. Dr. Gagan Singh Sonal, a director with the government's anti-malaria campaign, dismissed the new estimates as excessive, suggesting the study was aimed at getting media attention.

"Five people died in a remote district in [the Indian state of] Orissa and the papers were full of it. Are you telling me that 200,000 people die every year and no one gets to know?" he said.

In 2008, WHO reported nearly a million deaths from malaria worldwide resulting from 250 million cases of the disease in 109 countries.

Mosquito Monitoring Saves Lives and Money

Cutting surveillance for mosquito-borne diseases would likely translate into an exponential increase in both the number of human cases and the health costs when a disease outbreak occurs, according to an analysis by Emory University.

The Public Library of Science (PLoS) published the research, led by Emory disease ecologist Gonzalo Vazquez-Prokopec.

"Our analysis shows that halting mosquito surveillance can increase the management costs of epidemics by more than 300 times, in comparison with sustained surveillance and early case detection," Vazquez-Prokopec says.

The research was prompted by a U.S. government proposal last spring to slash funding for the vector-borne disease program of the Centers for Disease Control and Prevention. Congress ultimately voted to retain the program's budget at the same levels for 2011.

"This analysis provides scientific-based evidence of the need for more funding of mosquito surveillance, not less," says Uriel Kitron, a co-author of the study and the chair of Emory's Department of Environmental Studies.

The Emory analysis used data from two outbreaks of dengue fever in Cairns, Australia, that occurred in 2003 and 2009. A mathematical model was applied to the Cairns data to evaluate the economic impact of hypothetical epidemic curves, plotted against different response times. A response within two weeks of the introduction of the pathogen was assumed to occur with active disease surveillance in place, and delays of six-to-eight weeks were assumed when active disease and vector surveillance were eliminated.

In Cairns, where mosquito surveillance is active, the reactions to the dengue fever outbreaks were rapid. The costs of the epidemics – including vector control, case diagnosis, blood screening and work days lost to disease – totaled U.S. \$150,000 for the 2003 outbreak and \$1.1 million for the 2009 outbreak.

The analysis showed that a delayed response of four-to-six weeks to both Cairns dengue outbreaks would have resulted in drastically escalated costs of up to U.S. \$382 million. A slight increase in the virulence of the strain could have multiplied the cost by another 10 times.

Cairns has a tropical climate similar to South Florida, where a dengue fever outbreak occurred in 2009, Vazquez-Prokopec notes. "Predictions based on our analysis show that, if the Miami area had not had a surveillance system in place, the costs to control the Florida outbreak could have been higher than the entire U.S. budget for mosquito surveillance," he says.

While the modern-day United States has been relatively unscathed by vector-borne disease, it is not immune to a host of new and emerging pathogens, the researchers warn.

The emergence of West Nile Virus (WNV) in New York City in 1999 spurred better mosquito surveillance, and serves as an example of the consequences of a delayed response. By the time a correct diagnosis was made and proper controls were initiated, the pathogen had spread throughout the country. By the end of 2008, WNV had generated 28,961 known cases and 1,130 fatalities.

Pesticide General Permit Review & Application Training Workshop

This workshop is being offered by the Michigan Department of Natural Resources and Environment (DNRE) – Water Resources Division (WRD) to provide information to the regulated community regarding the 2009 6th Circuit Court ruling which established pesticide applications as point source discharges of pollutants under the Clean Water Act and mandated that these discharges now be covered under the NPDES permit program. WRD staff will provide a detailed review of the content of the pesticide general permits, explain the permit application process, summarize the record keeping and reporting requirements, and explain how the DNRE expects to handle compliance activities.

Lansing Community College, West Campus

5708 Cornerstone Dr., Lansing, Michigan

February 10, 2011

9:00 AM – 12:30 PM

Cost - \$75.00

For More Information go to:

www.michigan.gov/dnreworkshops

Select - Upcoming Workshops

Call 1-800-662-9278

Amway Grand Plaza – Important Tidbits of Information

- During the upcoming 25th Anniversary Conference at the Amway Grand Plaza, overnight parking fees are \$16 per day. Self-parking is available in the Amway Grand Parking Ramp whose entrance is located on Pearl Street.
- You can pay for parking at the desk on your room charge when you check out.
- Check in time is 4 p.m. Check out time is noon.
- Each room is outfitted with an iron, ironing board, and hair dryer.
- With the exception of Tower Club rooms, there are no coffee makers in the rooms. However, coffee is available in the lobby from 4:30 a.m. to 6:30 a.m. before Cornucopia opens.

Guest Room Rates

The Amway Grand Plaza has graciously extended the guest room rate of \$124 for 2 nights prior to and after our stay (January 30-February 4, 2011)!

Membership and Nominating Committee

The Nominating Committee will print a ballot listing the names of nominees for the Board of Directors; you will find this in your registration packet. Please be sure to attend the General Business Meeting to place your vote!

Recertification Credits

The Michigan Department of Agriculture has granted MMCA 6 recertification credits for the first full day of the annual conference and 3 credits for the second half-day session. Credits can be assigned to one of three categories: 7A (General Pest Management), 7F (Mosquito Control), or CORE.

Conference Entertainment

The Teen Angels have become a legend in Michigan. Over the past few years, however, Teen Angels have been spreading their particular brand of high quality entertainment all over the USA. Lush vocal harmony and the highest caliber musicianship, mixed with comedy and audience mingling, make the Angels' show one that people flock to see year in and year out.

We hope you'll join us after the banquet for a fun evening of entertainment. The Beach Boys, The Beatles, Frank Sinatra, Sly & the Family Stone, Motown, and so many more are done with complete authenticity with Teen Angels' signature sound. It's a show you'll really enjoy!



Conference Agenda

Wednesday, February 2, 2011	
8:00 AM	Registration
9:00 AM	Welcome – Mary McCarry, 2010 MMCA President
9:05 AM	Keynote Address - Frank Richards, PhD, The Carter Center
9:55 AM	AMCA Update - Janet McAllister, PhD
10:10 AM	Global Arbovirus Update, Ned Walker, PhD
10:30 AM	Break
William J. Lechel, II Memorial Scholarship Student Presentation	
10:45 AM	Inhibition of Larval <i>Aedes triseriatus</i> - Rebecca Morningstar
11:00 AM	Are Algae Important for <i>Aedes japonicus</i> Larvae? – Amanda Lorenz
11:15 AM	Lyme Disease Ticks and Pathogen – Jennifer Sidge
11:30 AM	<i>Anopheles funestus</i> : Possible Resurgence – Robert McCann
11:45 AM	Sequential Sampling Schemes for WNV – Danielle Donovan
Lunch (on your own)	
1:00 PM	A History of Michigan Mosquito Control – Randy Knepper
1:35 PM	Zenivex E4 – Same Great Performance – Loren Cunningham
1:45 PM	Eastern Equine Encephalitis in Michigan – Michael Kaufman, PhD
2:00 PM	Bed Bugs in Michigan – Erik Foster
2:30 PM	Vendor Presentations
2:45 PM	Break
3:05 PM	National Pollutant Discharge Elimination System – Jeff Fischer
3:30 PM	Evaluating Effectiveness of Barrier Treatments – Stephen Manweiler, PhD
4:10 PM	The Pareto Principle and Mosquito Control – Mike McGinnis
4:25 PM	Distribution of <i>Aedes japonicus</i> in Minnesota – Jim Stark
Thursday, February 3, 2011	
8:15 AM	Annual MMCA Business Meeting & 2011 Elections
9:00 AM	Organic Gardening and Mosquito Control – Lee Mitchell
9:20 AM	Michigan Arbovirus Surveillance – Betsy Brouhard
9:40 AM	Updates on the New 7F Manual – Michael Kaufman, PhD
9:55 AM	Rain Gardens – A Green Approach to Storm Water Management – Nicole Pasch
10:10 AM	The Living Stream – Rich Merritt, PhD
10:40 AM	Natular Tests Against <i>Anopheles</i> in Kenya – Ned Walker, PhD
11:00 AM	Break
11:25 AM	Using Niche Models to Project Geographic Range Change – Jessica Hellmann, PhD
11:45 AM	Genetics and Temperature Tolerances of <i>Aedes japonicus</i> – Derrick Parker
Back-to-Basics Presentations	
12:05 PM	Specifics of CDC Trapping – Douglas Allen
12:20 PM	Using Surveillance Data in a Control Program – Tom Wilmot, PhD
12:30 PM	Concluding Remarks – Michael Kaufman, PhD

Malaria: Progress in Africa Faces Nasty Bite from Environmental Extremists

While the World Health Organization (WHO) reported that confirmed malaria cases in 11 African nations dropped by more than fifty percent over the last decade, these results were mitigated by a number of less welcome findings.

First, improvements in many other places were far more modest, and three African countries saw jumps in confirmed cases: Rwanda, Sao Tome and Principe and Zambia. Thus, the actual number of reported malaria deaths worldwide only fell by a little more than twenty percent — from 985,000 in 2000 to 781,000 in 2009. Second, while the number of people in sub-Saharan Africa protected by insecticide-treated mosquito nets (ITNs) rose, and there are now enough nets to guard 578 million people at risk, many people still can't afford them, and the nets can and do fall apart over time. Further, most of the ITNs utilize pyrethroids, a type of insecticide that is not as potent as DDT and also tends to induce more resistant organisms. As has been widely documented, elimination of DDT as an anti-malaria agent directly correlates with malaria's resurgence; by contrast, between 1993 and 1995, when Ecuador boosted its use of DDT spraying, malaria rates promptly declined 61 percent. Yet environmental groups have succeeded in imposing worldwide treaties broadly proscribing its use.

Temephos Cancellation

As you are probably aware, EPA recently published the notice of receipt of cancellation requests for all Temephos product registrations (Federal Register, Vol. 75, No. 217, Wed., Nov. 10, 2010).

The manufacturers, elected to seek voluntarily cancellation of Temephos registrations due to the cost of generating the data required to support continued registration. Under the proposed cancellation provisions, EPA will allow the manufacturing of Temephos products through 12/31/15 and distribution through 12/31/2016. Products in the inventory of end users after 12/31/2016 may be used until the supply is exhausted.

Mosquito Trial to Cut Dengue Infection Gets Go-Ahead in Malaysia

The Malaysian government has granted approval to release genetically modified sterile mosquitoes into the wild in an open field trial. Oxitec is hoping that its method of controlling the mosquito population will cut the spread of dengue infection.

Bednets are of little use, because this strain of mosquito also bites during the day. With more than 2.5 million people at risk of infection, methods to control the mosquito population and combat the spread of disease are urgently needed.

Oxitec has created a genetically modified strain of *Aedes aegypti* that is completely sterile and unable to reproduce. When the sterile males are released into the wild, they compete with other male mosquitoes to mate with females. But if a wild female mates with a sterile male, she will have no offspring that can survive to adulthood, and so the population of the next generation of mosquitoes is reduced.

The release of sterile male mosquitoes offers a safe alternative to insecticides. Because they only last for a generation, releasing the GM mosquitoes can't permanently alter the ecosystem. Approval for the Malaysian trial follows the success of a smaller-scale trial conducted in the Cayman Islands earlier this year, which resulted in a significant reduction in the local mosquito population.

Scientists released batches of the sterile male mosquitoes in cages, three times a week over a 16-hectare area between May and October of this year. By August, mosquito numbers in the trial area had dropped by 80 per cent compared with a neighboring area where no sterile mosquitoes were released. Oxitec's Chief Scientific Officer, Luke Alphey, explains: "The results from the Cayman trial show that our method works in principle, but with such a small area involved, it would have been difficult to detect a drop in dengue cases. Our estimates suggest that an 80 per cent reduction in mosquitoes should result in fewer dengue infections and we are hopeful that these effects will begin to be seen in the larger Malaysian trial."



News From Around The Districts

It's once again time to both look back at our fourth quarter accomplishments and to ring in a New Year. The season wrapped up on October 2, when we finished the last of our clean-up and hosted the second scrap tire drive of the 2010 season, collecting 1002 tires in the process. Since then we've been busy with invoices, correspondence, cleaning, inventories, orders, equipment and vehicle repairs, installation of LED lights on ditch trucks and ULV trucks, and preparations for the 2011 season. The 2010 Annual Report has also been completed and will be presented to the Board of Commissioners as well as to the Mid-Michigan Technical Advisory Committee in March, 2011. It's available for viewing at our website www.baycounty-mi.gov/MosquitoControl.

We gladly took part in the MMCA's 7F Training Session in October, giving several presentations to the attendees. At this, our second training session, there seems to be continued interest in having recertification seminars in the future.

The 2011 chemical order was compiled and bid specifications were sent out to vendors in early December in conjunction with Midland County Mosquito Control and Tuscola County Mosquito Abatement. Chemical bids will be opened in Midland in January and vendors will be notified.

We continue our community-outreach efforts, which include presentations at local elementary schools. Database and map updates continue to take place. Staff members recently watched the AMCA's webinar on EEE and look forward to the next webinar in February on Mosquito Management and Risk Assessment.

Like many of you, Bay County Mosquito Control recently submitted its comments on the latest NPDES draft. Hopefully, the DNRE will take these comments to heart and make some adjustments to the verbiage in this permit so that it's more palatable to us all. NPDES storm water permits are also required for industries with storm water discharges to surface waters. Two of our staff members (Bob and Justin) have undergone Industrial Storm Water Certified Operator training. Responsibilities of certified operators include minimizing pollutants to storm water runoff, inspecting and maintaining compliance with the storm water permit, keeping records, and properly responding to spills.

In the next few months we'll be working on MMCA annual meeting plans, the 2011 program plan, hiring of new seasonal staff – always a challenge, and following with great interest the NPDES process! And before we all know it, April and the spring treat campaign will be upon us!

Much of our time recently has been dedicated to understanding and preparing for the Clean Water Act NPDES permit process. This process will be somewhere between a minor inconvenience to a program-derailing impediment for anyone conducting mosquito control operations in the U.S. In Michigan, if larvicides are applied to more than a specified threshold (this threshold currently stands at 640 acres in a calendar), then the applicator must apply for a certificate of coverage (COC) issued by the State for authorization to discharge (apply pesticides). Pesticide applications to treatment areas that total less than 640 acres do not need a COC but are required to be in compliance with most terms and conditions of the general permit. These include having an integrated mosquito management program, developing a Pesticide Discharge Management Plan, keeping specific treatment records (most of which are already required by MDA regulations) and others. If you haven't already made plans to do so, you would do well to attend our upcoming conference in Grand Rapids for a more detailed report on the Michigan permit.

Back here in Midland County, work continues on development of plans for 2011, implementation of Arc GIS information into our control operations and the call for insecticide bids.

Best of luck in 2011!

As is typical for this time of year, staff are busy on winter projects which include's: repair and preventative maintenance of application equipment and vehicles; fabrication of ULV spray equipment to allow for 15 mph application; catch basin mapping project; bodywork on damaged vehicles; and purchase and outfitting two new half ton vehicles for our fleet.

Our 2010 annual report has been completed and can be reviewed or printed from our website at <http://www.scmac.org/annualreport.htm> for those who are interested.

School presentations by our education department continue to be very popular. This school year our Education Coordinator has already scheduled over 187 classroom presentations at 35 schools. We have also presented to several community service organizations including Rotary, Women's Study Club, and Community Watch Groups.

We have already secured permits to conduct our aerial larviciding program for spring mosquitoes on state game areas (Shiawassee River State Game Area & Gratiot-Saginaw State Game Area). Regretfully, we didn't meet the criteria this year for the federal refuge (Shiawassee National Wildlife Refuge) permit process. We have been conducting aerial larviciding on the refuge for 25 years, thus this could become a contentious issue if our permit is denied.

The National Pollutant Discharge Elimination System (NPDES) permit is moving closer towards its April 2011 implementation. However, issues in the current draft are so unacceptable that we may have no alternative but to try the political route to a solution.

In the next couple months we will begin the process of hiring seasonal staff for the upcoming season. Other projects will include revising and updating our yearly Program Plan; submitting our first NPDES permit; updating Employee Manual; and sending out letters to citizens on our No Spray list and Medical Certification list.

The County of Saginaw is projecting a 6.6 million dollar budget deficient next year. Thus all expenditures have been extremely scrutinized, with travel being a very popular issue for the media.

Before we know it the snow will be melting and staff will be sampling larvae in seasonally flooded woodland pools and another control season will be here!

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- A few of our "off season" accomplishments include:
 - Completion of the 2011 operating budget;
 - Participation in the 7F training session, held in Bay City;
 - Selection of a dealership for the purchase of two replacement vehicles;
 - Planning for our future staffing needs, including contacting returning personnel, and posting vacancies;
 - Requesting insecticide bids;
 - Finishing the frame-work for our annual report; and,
 - Updating all of our route maps.

The last of our "tire drives" (a collaboration with Tuscola County Recycling) was held in November. Eight of these collections, held at various sites, were performed. The positive response has led to the scheduling of twelve events for 2011, to be slated for spring-time.

We, along with our fellow-agencies, await the final version of the NPDES implementation. This, along with other important topics, is sure to be addressed at the MMCA Conference, in February. We look forward to seeing everyone, at that time.

Happy New Year!



Maryssa Mitchell -1st Place - is a senior at Pine River High School where she participates in student council, National Honor Society, and varsity competitive cheerleading. She plans on attending Michigan State University in the fall of 2011, majoring in Pre-Medicine.

Kenley Farrel Memorial Scholarship Winners

Dalton Allan – Runner-up – Dalton is a senior at Saginaw Arts and Sciences Academy. He plans on attending the University of Michigan, in the fall, where he will pursue a career as a Professor of Mathematics



**Michigan Mosquito
Control Association**
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Winter