



# Skeeter Scanner

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## President's Message

Since my last message, I was successful in scheduling meetings at local offices for federal legislatures (Representatives' Camp and Kildee and Senators' Levin and Stabenow). Senator Levin's Aide toured the Saginaw Mosquito Control facility and had the opportunity to see our operation in detail and ask many questions; hopefully he left with a better understanding of mosquito control. These meetings not only allowed me to share concerns regarding federal issues that affect mosquito control, but also provided an educational opportunity to share in detail how mosquito control works and its benefits to the citizens of the communities we serve.



As of this writing West Nile virus has already been detected in Michigan which is much earlier than normal. With this early detection in combination with the hot summer we have already experienced it is likely that West Nile will be very active this summer. This is why we are here, to protect the public health of the citizens of Michigan. However, this also provides opportunities, as the media finds this subject interesting. Do not be shy! Send out informative news releases and never pass up the chance to discuss the benefits mosquito control brings to your community with the local newspaper, radio station, or TV station.

Recently our colleagues in Bay County and Midland were informed by the Michigan Department of Natural Resources that they were opting out of mosquito control on state lands in their respective counties. This is an ominous sign and could provide hardships to many of us who perform control operations on state lands such as: state game areas, state forests, and state recreational areas just to name a few. This issue will be followed closely by MMCA and we will support our Bay and Midland County members to reach a successful resolution to this problem.

Also be reminded that in October we will be hosting our annual Category 7F Mosquito Control seminar. This is a simple and inexpensive way to get commercial pesticide applicator re-certification credits while also being updated on current mosquito control methods and technology.

If you have any questions, concerns, or suggestions please do not hesitate to contact me!

*Randall G. Hopper*

## Parkinson's Researcher Fabricated Pesticide Data

A former assistant professor at the University of Medicine and Dentistry, New Jersey (UMDNJ) committed research misconduct by fabricating data, according to an investigation by the university and the Department of Health and Human Services' Office of Research Integrity (ORI). The ORI, which announced its findings on Thursday (June 28) <http://www.gpo.gov/fdsys/pkg/FR-2012-06-28/html/2012-15887.htm> determined that Mona Thiruchelvam falsified cell count data published in two papers in 2005 in *Environmental Health Perspectives* and *Journal of Biological Chemistry*, both of which she has agreed to retract.

Thiruchelvam fabricated stereological cell count data in two studies on how pesticides influence neuronal mechanisms involved in Parkinson's disease (PD). The studies reported the results of 13 new experiments that supposedly counted nigrostriatal neurons in the brains of mice and rats, but an investigation spearheaded by the UMDNJ determined those counts were never taken. The nigrostriatal pathway is a major dopamine circuit in the brain, and loss of neurons in this area is one of the main features of Parkinson's disease.

The papers slated for retraction investigate the neurological response to the combined pesticides paraquat and maneb, and suggest the pesticide atrazine also has a role in disrupting dopamine pathways. The false data were used to create several summary bar graphs, which Thiruchelvam modified to support the hypothesis that proteasomal dysfunction is higher in males than females with PD, and that exposure to paraquat and maneb enhances this effect.

Gary Miller, who cited the *Environmental Health Perspectives* paper (which has been cited 36 times, according to ISI), said his lab has always been skeptical about the association between certain herbicides and Parkinson's. "There is strong evidence of an association between pesticides and PD, but figuring out exactly which compounds are driving this has been difficult," he told *The Scientist* by email. "I suspect some laboratories have pursued studies based on these findings, which is unfortunate. The retraction of these papers doesn't help the field."

Deborah Cory-Slechta, a co-author on the same paper, said in an email she was "both shocked and disappointed" by the news. Both papers have had influence in the field, with the *Journal of Biological Chemistry* study being cited 73 times according to ISI.

A collaborator at UMDNJ first brought the matter to the attention of university research integrity officials a few years after Thiruchelvam joined the university in 2003, when he realized she was publishing cell density data without using his lab as she had done before. An initial inquiry was launched, for which Thiruchelvam provided the name of a researcher in California who she said had provided her with data. The witness, who Thiruchelvam said by that point had moved to England, was called and confirmed the story, but further investigation by UMDNJ revealed that this was a false witness. When investigators got a hold of the actual person Thiruchelvam had named, they learned she still resided in California and that she denied providing any data to Thiruchelvam.

In her defense, Thiruchelvam then produced 293 data files she said were the product of a confocal microscope system manufactured by the company Micro Bright Field (MBF). When UMDNJ investigators gave MBF the data to interpret, the company concluded that the files were corrupted and couldn't be verified as real or false. However, when the case was passed to the ORI for oversight review, agents used forensic computing software to determine that many of the files, despite having different file names and dates, were identical in content.

This suggested to the ORI that the corruption had been intentional on the part of Thiruchelvam, and not due to damage by a computer virus. The identical files were then sent back to MBF for further analysis, which subsequently discovered that all of the files had come from one single file created in 2002 during one of Thiruchelvam's previous investigations at the University of Rochester, before she joined UMDNJ.

After the investigation was passed back to UMDNJ and the findings were confirmed, Thiruchelvam was notified and provided with an opportunity to

respond. She never did, and in February 2010, she left the UMDNJ. The ORI sent her a Voluntary Exclusion Agreement, which excludes her from federal funding and serving on advisory committees for seven years, which she signed without comment.

## **NPDES Report Moratorium**

By Jeff Fischer

Resulting from continued discussions with affected stakeholders and in consideration of all relevant factors, the Department of Environmental Quality (Department) has determined it to be necessary and prudent to authorize a moratorium on the requirement for large entities to submit an annual report to the Department. Effective May 14, 2012, large entities (as defined in Part II of each General Permit) will not be required to submit an annual report to the Permits Section by November 30, 2012. This moratorium is applicable only for the first year the Pesticide General Permits are in effect. Entities affected by this decision will not be required to retroactively report this information in subsequent years. This moratorium on the Annual Report submittal requirement does not obviate any permittee from the legal obligation to comply with all other limitations, conditions, and requirements as specified in the language of the applicable Pesticide General Permit.

## **Dengue Fever May be Costlier than Malaria**

The spread of dengue fever could cause more sickness and prove more costly globally than malaria, U.S. public health experts said.

Study co-author Donald Shepard of Brandeis University's Schneider Institutes for Health Policy said dengue fever inflicts a \$37.8 million burden on Puerto Rico each year, but every \$1 invested in traditional surveillance and prevention could save \$5 in costs associated with the illness.

Known as "break-bone fever" for its capacity to cause excruciating joint pain, the disease -- transmitted by a bite from the *Aedes aegypti* mosquito -- broke out in the Florida Keys in 2010 and threatens nearly 3 billion people worldwide, Shepard said.

Puerto Rico experienced its largest outbreak ever of dengue in 2010, with 22,648 cases reported for an incidence rate of 57 per 10,000 people. The availability of treatment has limited dengue-related fatalities in Puerto Rico, with deaths averaging about 16 per year, the study found.

"People generally think of dengue as a disease of poor countries; The fact that we found it to be a major burden in a U.S. territory -- and because it recently has cropped up on the U.S. mainland -- is a reminder that mosquito-borne illnesses can present an equal opportunity threat," Shepard said in a statement.

The study, published in the American Journal of Tropical Medicine and Hygiene, found overall, households accounted for almost half of the costs of the disease, with government paying for 24 percent, insurance companies 22 percent and employers 7 percent.

## **Purchasing Pesticides on the Internet Poses Big Risks**

The sale of counterfeit, fake and adulterated pesticides has grown into a major, worldwide problem, affecting the United States as well as Europe. Anyone who doubts the scope of the problem would do well to review the extensive list of enforcement actions taken by the U.S. Environmental Protection Agency (EPA) at <http://www.epa.gov/oecaagct/lfraenf.html> The list includes only those infractions that were identified and prosecuted. One can assume that many more went undetected.

### Counterfeit Risk

Illegal pesticides usually come into the U.S. from foreign countries where they are sold over the Internet. These pesticides are illegal because they have not been evaluated by the EPA to ensure their use will not harm people or the environment, and are often sold without proper directions or warnings on the labels. These products are not only illegal, but they may be much higher in toxicity than the legal products.

Counterfeit pesticides are produced and packaged to look like legal products, but their contents may not

match their labels. Counterfeit products may have less active ingredient than the legal version or they may contain cheaper, more toxic, active ingredients. Counterfeit pesticides can be ineffective or dangerous to people, pets and the environment.

### Mislabeled Products

Pesticides are designed to control specific organisms. Handling pesticides according to EPA and state registration and labeling requirements ensures that exposure to these products is minimized. However, a mislabeled, counterfeit or illegal pesticide may be harmful to humans, other organisms, and the environment. The anonymity and remoteness of Internet sellers facilitates such wrongdoing. U.S. EPA is working closely with the states through the Association of American Pesticide Control Officials to develop an informed and nationally consistent approach to pesticide electronic commerce activities.

Both federal (FIFRA) and state pesticide laws and regulations apply to pesticides sold over the Internet.

It is the seller's responsibility to ensure that pesticides sold over the Internet are labeled according to federal standards and are registered both by the EPA and any state in which they are distributed before offering them for sale.

### Violation Risk: Federal/State

There are also federal and state laws affecting the shipment, proper transportation, and delivery of pesticides. Federal laws administered by the U.S. EPA, the U.S. Department of Transportation, U.S. Postal Service, and the U.S. Department of Homeland Security regulate the shipping and transportation of pesticides. Each state has its own laws regulating the sale, distribution, and use of pesticides within that state. Some states regulate restricted use pesticides (RUPs) more strictly than the federal government. RUPs may be sold only by licensed dealers and purchased only by certified applicators.

If you purchase pesticides over the Internet, you must remember that "the label is the law." The pesticide you purchase must be used in accordance

with the instructions on the label. It is a violation of federal law to use a pesticide in a manner inconsistent with its labeling. Unfortunately, many counterfeit, fake or illegal pesticides are sold over the Internet with incorrect and incomplete labeling! Pesticides marketed on Web sites may or may not be registered for use in the U.S. Even if a particular pesticide offered for sale is registered, it may not be labeled in compliance with FIFRA or relevant state laws and regulations.

### **Rainproof**

Scientists using high-speed cameras have discovered how mosquitoes survive impacts with the falling raindrops they encounter while flying through downpours. Those raindrops can weigh up to 50 times as much as the insect, which simply takes a brief ride on them without any significant amount of force being transferred to its body. The team says the insect's strong exoskeleton also renders it impervious to the precipitation while in flight. "If you were to scale up the impact to human size...it would be like standing in the road and getting hit by a car," said Andrew Dickerson of the Georgia Institute of Technology. He and others found that the mosquitoes are not so lucky if struck while sitting on a branch or on the ground. Those impacts may kill them in the same way they would die if the raindrop they were riding hits the ground before they fly free.

### **Safe Chemical Policy Site on Web**

Angela Logomasini, PhD. recently launched a site for the Competitive Enterprise Institute (CEI) called [Safechemicalpolicy.org](http://www.safechemicalpolicy.org). It provides science-based information on chemicals for policymakers, consumers, media, etc.

Please check it out.

<http://www.safechemicalpolicy.org>

Like the site's Facebook page:

<http://www.facebook.com/pages/SafeChemicalPolicy/269891739775054>

Follow on twitter:

<https://twitter.com/#!/chemicalpolicy>

## **Lots of Grime, But No Water, In a Birdbath**

This one's for the birds. The New York Times reported on Monday that standing water - in a puddle or even a birdbath - can subject the offending property owner to a fine of up to \$2,000. It's a violation of the New York City health code aimed at combating mosquitoes that carry West Nile virus.

So when a reader who lives in the neighborhood pointed out that there's a forlorn birdbath next to City Hall in Lower Manhattan, we just had to investigate.

The birdbath is on a grassy patch just east of the City Council's offices bordered by construction apparatus for the renovation of City Hall. The basin of the bath is pretty grungy looking, but contained no standing water when inspected. If the fountain apparatus works, that would keep the water circulating and might drain any standing water.

A spokesman for the parks department said the birdbath had been there since 1870, had a "draining mechanism" and was "regularly emptied to ensure that the water does not become a breeding ground for mosquitoes." A mayoral spokesman preferred to describe it as not a birdbath per se, but as an ornamental fountain. No birds could be reached for comment.

## **Mosquitoes: How We Smell Is Why They Bite**

Now that the summer season is in full swing, many of us will be hosting picnics and barbecues and socializing outside. Chances are, we'll also have some unwanted guests in the form of mosquitoes.

Mosquitoes seem to have an uncanny ability to locate us and Zainulabeuddin Syed, a mosquito biologist with the University of Notre Dame's Eck Institute for Global Health, has gone a long way toward determining how they do it.

In short, it's because of the way we smell.

Zain studies olfaction in mosquitoes and other insects and he points out that mosquitoes have an extraordinary sense of smell. A big part of their brains are devoted to this sense. Only female

mosquitoes feed on blood meals and they use the blood to produce eggs. And female mosquitoes find their blood meals through the use of smell.

For example, *Culex* mosquitoes, which transmit West Nile and other life-threatening illnesses, are able to detect even minute concentrations of nonanal, a chemical substance given off by humans. They detect nonanal through receptor neurons on their antennae. Birds are the main hosts of mosquitoes and they also give off nonanal. Birds are the main source of the West Nile virus and when mosquitoes move on to feast on humans and other species, they transmit the virus to them.

An understanding of the olfactory behavior of mosquitoes that leads them to feed on humans can play an important role in developing more effective methods of mosquito and disease control.

Syed is also researching the role that plants play in mosquito behavior. He points out that despite our occasional feeling that we're surrounded by hordes of hungry mosquitoes, they spend a relatively short amount of time feeding. Rather, they spend considerable time on plants taking the sugars that provide energy for those occasions when they do feed.

The Notre Dame researcher's lab is studying what smells plants that mosquitoes are attracted to give off. Again, a deeper understanding of the role of the chemicals produced by plants and how mosquitoes select plants to obtain their energy sources can lead to better control and elimination strategies.

Syed points out that DEET still is an effective mosquito repellent and he was one of a team of researchers who revised the conventional understanding of how it works. The prevailing wisdom among researchers was that DEET was effective because it masked odors that attract mosquitoes. However, research by Syed and his colleagues showed that mosquitoes smell DEET directly and avoid it.

For many of us, better mosquito control techniques would result in greater comfort and convenience when we're outdoors. In many areas of the world, however, mosquito control is a matter of life and death. In Africa alone, malaria, one of the many diseases transmitted by mosquitoes, takes a human

life, most frequently a child's, every 30 seconds. A better understanding of the role smell plays in mosquito behavior can offer important clues that may lead to new control strategies.

## Human Insulin Suppresses Mosquito Immune System: Increasing Cases of Type II Diabetes Could Abet Malaria's Spread

Human insulin suppresses the mosquito immune system, according to a paper in the June *Infection and Immunity*. And while mosquitoes and malaria might seem to go together like baseball and hotdogs, mosquitoes' immunological resistance to the malaria parasite actually slows its spread among *H. sapiens*.

"A fair portion actually fight off the infection," says first author Nazzy Pakpour of the University of California, Davis.

But now the rate of type 2 diabetes is climbing in Africa as in most of the rest of the world, to the point where by 2030, one in five adults there are predicted to be so-afflicted. More diabetes means more hyperinsulinemia -- more human insulin to inhibit mosquitoes' immune response to *Plasmodium falciparum*, thus aiding and abetting transmission of this dread disease.

As horrific as the medical consequences of all this might be, the science is intriguing. "It's crazy to think something in our blood could change how mosquitoes respond to parasites," says Pakpour.

In earlier work, Pakpour and collaborators showed that ingested human insulin activates the insulin/IGF-1 signaling pathway in *Anopheles stephensi* mosquitoes, making them more vulnerable to invasion by *P. falciparum*. The new expression of certain mosquito immunity genes that

are under the same regulatory control, and that human insulin suppressed mosquito immunity by activating the so-called PI3K signaling pathway, and that artificially inhibiting that pathway could reverse the immunosuppressive effects of human insulin.

## New Rearing System May Aid Sterile Insect Technique against Mosquitoes

The requirement for efficient mosquito mass-rearing technology has been one of the major obstacles preventing the large scale application of the Sterile Insect Technique (SIT) against mosquitoes.

However, according to a new article in the next issue of the *Journal of Medical Entomology*, scientists at the United Nations Food and Agriculture Organization (FAO) and the International Atomic Energy Agency (IAEA) have developed a larval rearing unit based on the use of a stainless steel rack that is expected to be able to successfully rear 140,000-175,000 adult mosquitoes per rack.

The authors of the new article report that the new mechanized rearing unit is simple to handle, maintains minimal water temperature variation and negligible water evaporation, and allows normal larval development. The mosquito mass-rearing tray was designed to provide a large surface area of shallow water that would closely mimic natural breeding sites, and the trays stack into a dedicated rack structure which fill and drain easily. Furthermore, the low amount of labor required to operate the system also reduces costs.

"Our larval rearing unit could enhance any mosquito control strategy in which large-scale releases of mosquitoes are needed to suppress or replace natural populations," said Fabrizio Balestrino.



## As if Malaria Weren't Misery Enough

As the global health community works to increase access to malaria treatment and prevention measures, two significant obstacles are becoming increasingly serious. Counterfeit and poorly manufactured drugs, along with higher levels of insecticide resistance among malaria-carrying mosquitoes, are hindering the public health community's efforts to tackle malaria, which kills somewhere between 650,000 and 1.2 million people annually — especially young children and infants in sub-Saharan Africa.

A new study by researchers at the Fogarty International Center at the National Institutes of Health, published in *The Lancet Infectious Diseases*, demonstrated the ineffectiveness of many malaria drugs currently being sold. Upon examining 1,500 samples of malaria drugs from seven Southeast Asian countries, the researchers found that a substantial number — over one-third — were fake or of substandard quality. Similar results have been found in 21 sub-Saharan African countries, suggesting that this is a widespread phenomenon. The study authors report that a lack of quality-control oversight, insufficient punishment for drug counterfeiters, and poor knowledge about treatment among the population and health workers are all contributing to the ongoing problems of ineffective and fake medicines. Beyond endangering one's health, these low-quality drugs can increase the risk of developing drug-resistant strains of malaria.

Furthermore, researchers are finding that mosquito resistance to insecticides is becoming increasingly problematic in regions of the world where malaria is endemic. The World Health Organization (WHO) reports that such resistance has been identified in 64 countries. There are four main classes of insecticides employed in the WHO's anti-malarial efforts; in every region where malaria is endemic, researchers have found resistance to at least one of these classes of insecticides. In certain places, in fact, there is resistance to all four types.

“The tools we have today work extremely well in almost all settings, so we don't want people throwing their hands up in the air and saying this is a catastrophe,” explains Dr. Robert Newman, director of the WHO's global malaria program. But, he notes, it's important that we “buy ourselves

many more years of being able to use them, by responding quickly when we find resistance and proactively putting in strategies to stop the emergence of resistance...” These steps will both counter the toll of malaria and decrease the price of malaria control programs, which currently cost \$1.5 billion each year.

## Researchers Create Mosquitoes Incapable of Transmitting Malaria

Mosquitoes bred to be unable to infect people with the malaria parasite are an attractive approach to helping curb one of the world's most pressing public health issues, according to UC Irvine scientists.

Anthony James and colleagues from UCI and the Pasteur Institute in Paris have produced a model of the *Anopheles stephensi* mosquito, a major source of malaria in India and the Middle East that impairs the development of the malaria parasite. These mosquitoes, in turn, cannot transmit the disease through their bites.

“Our group has made significant advances with the creation of transgenic mosquitoes,” said James. “But this is the first model of a malaria vector with a genetic modification that can potentially exist in wild populations and be transferred through generations without affecting their fitness.”

James said one advantage of his group's method is that it can be applied to the dozens of different mosquito types that harbor and transmit the *Plasmodium falciparum* parasite, including those in Africa.

The researchers conceived their approach through mouse studies. Mice infected with the human form of malaria create antibodies that kill the parasite. James' team exploited the molecular components of this mouse immune-system response and engineered genes that could produce the same response in mosquitoes. In their model, antibodies are released in genetically modified mosquitoes that render the parasite harmless to others.

“We see a complete deletion of the infectious version of the malaria parasite,” said James, a member of the National Academy of Sciences.



# News From Around The Districts

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SAGINAW

So far this year mosquito densities have been average to below average. Due to the unique weather patterns this spring combined with our control efforts spring *Aedes* mosquito levels were significantly below average. Since we experienced no significant rain event in May or June, floodwater *Aedes* mosquito densities varied between average and below average. By the end of June conditions were very dry and larval control efforts were concentrated against summer *Culex* found in catch basins, tires, sewage lagoons, and abandoned swimming pools.

We received notice of our first West Nile positive mosquito pool. The sample of *Culex* mosquitoes was collected in an elevated trap at Green Pointe Nature Center on June 11<sup>th</sup>. This is 5 weeks earlier than in previous years.

We have struggled greatly this summer trying to hire and maintain our seasonal workforce. Numerous employees have quit for other job opportunities while others have chosen at the last minute to not work for our agency. Additionally, we have had an unusual number of seasonal employees who have had medical issues. In summary, we have had to move staff around from shift to shift and be creative to meet our manpower needs.

Our third and final tire drive of the season was held the week of July 23-27<sup>th</sup>. The hours for this drive were 2:30pm – 7:00pm to provide the convenience of evening tire drop off.

Our agency will also be hosting its annual blood drive on August 1<sup>st</sup> from 1:00 pm to 7:00 pm and walk-ins are encouraged.

For those interested in our daily activities you can keep current by following us on Facebook.

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MIDLAND

I guess that hope springs eternal in the mind of a fool because I am still waiting for the possibility of legislative relief from the regulatory burden of Clean Water Act NPDES permits for mosquito control pesticide applications. There is hope that language comparable to H.R. 872 can be added as an amendment to the 2012 Farm Bill. Stay tuned.

Almost every report from a mosquito control operation includes a reference to the weather of late and this one is no exception. I don't know exactly what happened but the warm winter and late spring cold snap seemed to disrupt the spring mosquitoes almost as much as the apple crop. Mosquito populations were much lower than usual in Midland County this year. Mother nature keeps after us though and the reprieve seems to be over. We are seeing significant numbers *Coquillettidia perturbans* and enough *Aedes vexans* to keep our adultciding crews on the job. My lawn is so dry that I am actually hoping for another rain storm to sweep by.

Midland County is facing a difficult task this year in that our largest landowner, the State of Michigan, has limited the amount of control allowed on State lands. Bay County has had similar challenge at the State Park. We will continue efforts to find a reasonable balance of activity in these areas.

Please note that the American Mosquito Control Association's next annual conference will be held February 24 - 28, 2013 in Atlantic City. This is the closest site to Michigan for an AMCA meeting over the next several years and hotel rates will be quite reasonable, so this would be a good one to consider if you would like to attend a national conference on occasion. Check the AMCA website for more details.

Keep up the good work.

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The scramble to treat the (very early developing) vernal waters was greatly assisted by lack of rainfall. This pattern has continued, with June accumulation at about one inch. The grass is crackly, and the corn is starting to curl. Thankfully, this means lower numbers of nuisance mosquitoes. However dry, hot conditions can portend of increased arbovirus activity; and we are seeing evidence of earlier- than- normal manifestation.

To date, we have performed two rounds of roadside ditch and sewage lagoon treatment. Catch basins have been done once. Unless we get some rain, cross country ditches will occupy most of our future larviciding efforts. Adulticiding requests are also low, for this time of year. Ten tire collections have been held at various township halls and DPW facilities. At least five more are scheduled for later in the season.

We began submitting pools of mosquitoes to Michigan State University, with collections from late May. These are analyzed for the presence of diseases perpetuated by our little “friends”. We also test some samples for WNV ourselves, utilizing the VecTest. Thus far, all samples have been negative. Again this year, citizen calls for bird testing have been infrequent.

Rainfall, or lack thereof, will determine how the remainder of this mosquito season plays out. Hope everyone stays cool!

The annual spring woodland-pool treatment program marked the beginning of BCMC’s mosquito control season, but was about 3 weeks ahead of schedule due to a warm spell in mid-March. Control efforts included aerial larviciding (about 50,000 acres) using one helicopter (Clarke) and two fixed-wing aircraft (Earl’s Spraying Service, Inc.), with the focus on areas near cities, towns and large developments. Spring mosquito species emerged as adults weeks early, but were never much of a problem most likely due to freezing temperatures that followed the early warm weather.

June started off with a bang as 1.5 inches of rain fell in the first two days, but by the end of the month we had drought-like conditions as only another 0.5 inch of rain fell in the remainder of the month. What we lacked in floodwater mosquitoes, we more than made up for in our cattail marsh mosquito, *Coquillettidia perturbans*. High counts in CDC traps in late June were primarily *Cq. perturbans*, which emerged in mid-June, but peaked around the Independence Day holiday week.

Throughout the warm weather months, BCMC will continue to treat larval or adult mosquitoes originating from woodlots, floodplains, freshwater wetlands, grassy fields, wet meadows, roadside ditches, ponds, catch basins, as well as containers. We’ve treated ditches in townships that have received enough rain to trigger a mosquito hatch and been back in woodlots and floodplains treating larvae. The number of complaint calls has been pretty low overall except for some pockets where floodplain mosquitoes were recently on the rise.

Two training sessions were held for both new and returning seasonal staff members to prepare them to test with the MDA as certified technicians. Most started working by mid May and will be with us until the end of August.

BCMC’s annual report was summarized and presented to the Bay County Board of Commissioners in April. Public education efforts continued with information distributed regarding artificial containers and basic homeowner control techniques. Presentations were given at Auburn Elementary School, Kolb Elementary School, and Handy Middle School.

We continue to monitor for West Nile virus this season by testing American Crows and Blue Jays using the VecTest kit and by submitting mosquitoes to MSU. Through June 30, we have tested five birds and have submitted 62 mosquito pools containing 1,898 adult females to MSU; nothing positive has been detected.

A few other items of interest: a scrap tire drive was held May 19 with 2,800 tires collected; this tire drive was held concurrently at the Bay County Fairgrounds and Pinconning County Park and the cost of holding the drive will be offset by a MDEQ Scrap Tire Grant; Rob Cascioli of Clarke visited May 7 to use the AIMS machine to measure the MMD’s of ULV machines; we ran a trial to evaluate Kontrol larvicide oil in spring woodlots with excellent results and will evaluate its effectiveness against warm water species like *Aedes vexans* as the summer goes on.

# MMCA Displays at Earth Day

The Departments of Environmental Quality (DEQ), Natural Resources (DNR), and Agriculture and Rural Development (MDARD) together celebrated Earth Day on April 19, 2012 at Constitution Hall in Lansing, Michigan, with more than **3,000** participants and attendees. The participants included **29** school groups; children and staff of DEQ, DNR, MDARD, and Department of Technology, Management, and Budget (DTMB) in celebration of Bring Your Child to Work Day; families and friends of Earth Day poster contest winners; partnering organizations; and other visitors.

Thank you to Amanda Lorenz and Matt Lundquist from Michigan State University for helping with our display on Earth Day.



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## Summer