

2014 ANNUAL REPORT 2015 PROGRAM PLAN



CONTENTS

02. Staff
03. Technical Advisory Committee
04. Tuscola County Map
05. Organization
06. 2014 Weather
07. Biology
08. Training and Testing (*Attachment A.*)
09. ULV Calibration (*Attachment B.*)
10. Mosquito Traps (*Attachment C.*)
11. Disease Surveillance (*Attachment D.*)
12. 2014 Mosquito Trapping Summary (*Attachment E.*)
13. Operations
14. Spring Larviciding (*Attachment F.*)
15. Adulticiding (*Attachment G.*)
16. Roadside Truck Fogging (*Attachment H.*)
17. Roadside Ditch Treatment (*Attachment I.*)
18. Summer Larviciding (*Attachment J.*)
19. Larviciding Sites
20. Tire Page
21. Garage News
22. Long Driveway
23. Public Education
24. Membership
25. 2015 Highlights



STAFF

MOSQUITO ABATEMENT STAFF

Kimberly Green - Director

Rich Colopy: Biologist

Larry Zapfe: Equipment Technician

COUNTY BOARD OF COMMISSIONERS

District 1: Roger Allen

District 2: Thomas Bardwell

District 3: Christine Trisch

District 4: Craig Kirkpatrick

District 5: Matt Bierlein

COUNTY ADMINISTRATION

Michael Hoagland, County Controller

CONSULTANTS

Edward Walker, Ph.D., Michigan State University

Richard Merritt, Ph.D., Michigan State University

Michael Kaufman, Ph.D., Michigan State University



TECHNICAL ADVISORY COMMITTEE

COMMITTEE MEMBERS

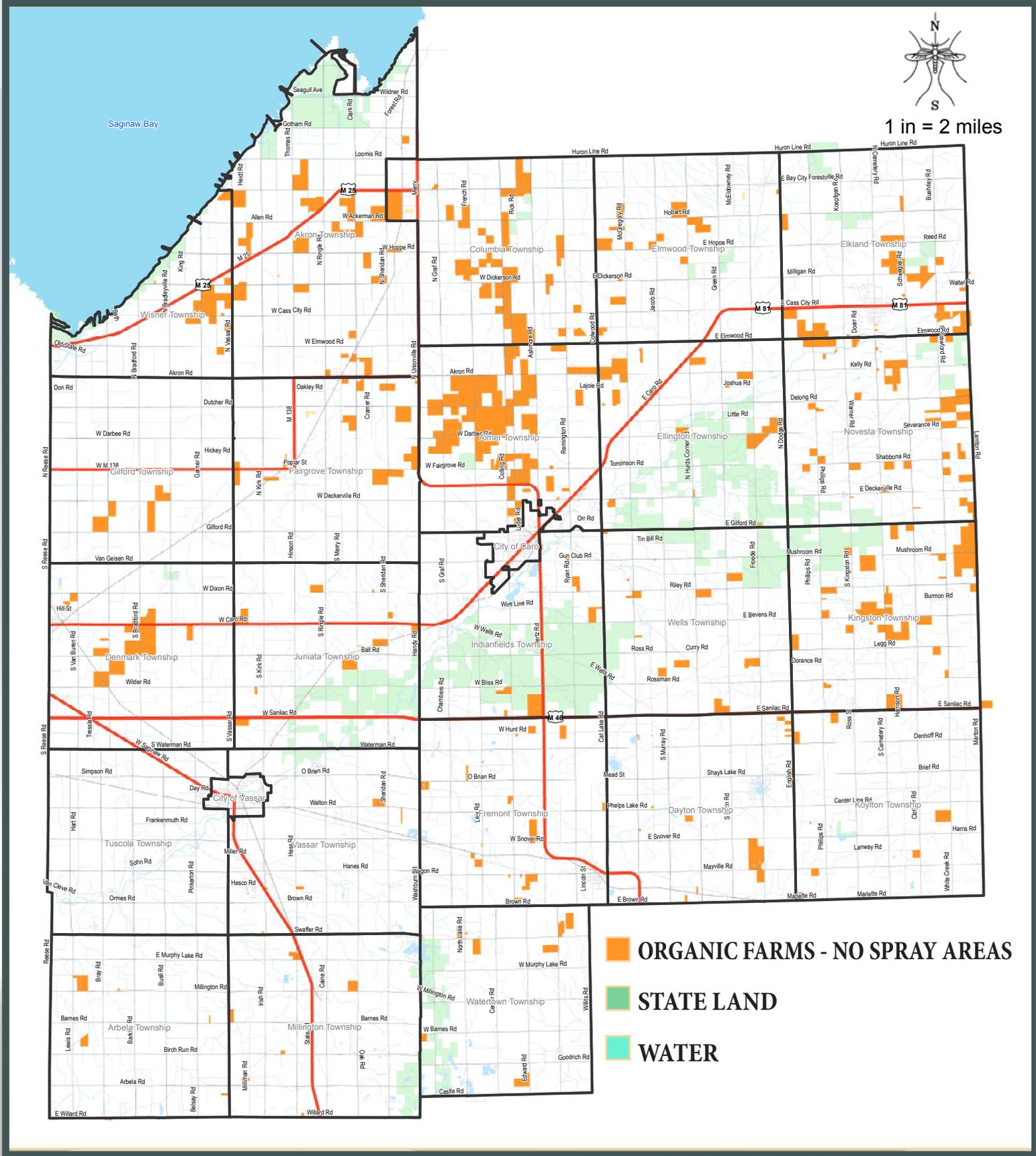
- John D. Bacon Saginaw Valley Beekeepers Association
- Mike Krecek Midland County Health Department
- Cynthia Chilcote Midland County Resident
- Barb MacGregor Bay County Health Department
- Doug D. Enos Midland County Drain Commission
- Erik S. Foster Michigan Department of Community Health
- John Hebert Bay Regional Medical Center
- Roger Allen Tuscola County Board of Commissioners
- Kent Singer Tuscola County Health Department
- John Hill Michigan Department of Agriculture
- Joseph Rivet Bay County Drain Commission
- Richard Somalski Bay Landscaping



TUSCOLA COUNTY MAP



1 in = 2 miles



- ORGANIC FARMS - NO SPRAY AREAS
- STATE LAND
- WATER



ORGANIZATION

The Tuscola County Mosquito Abatement (TCMA) district was originally formed in 1997, after a millage proposal was passed by the citizens of Tuscola County. In August 2014 a six year renewal was passed with 85% in favor. Funding for the 2014 mosquito control season was collected during the winter 2013 taxes, at a rate of 0.65 mils.

Tuscola County is one of four counties in Michigan with a formal, comprehensive mosquito control

program. TCMA is a county governmental agency which serves to control nuisance and disease vectoring mosquitoes. A Technical Advisory Committee (TAC) composed of some of Michigan's leading biologists, entomologists, conservationists and scientists, review TCMA's program every March.

Mosquito Abatement is based on Integrated Pest Management (IPM) practices. IPM is generally broken down into five categories or steps. These steps include: identification of the pest, understanding of the pest's biology, monitoring the pest, developing sound goals to manage the pest, and implementation of an IPM program.

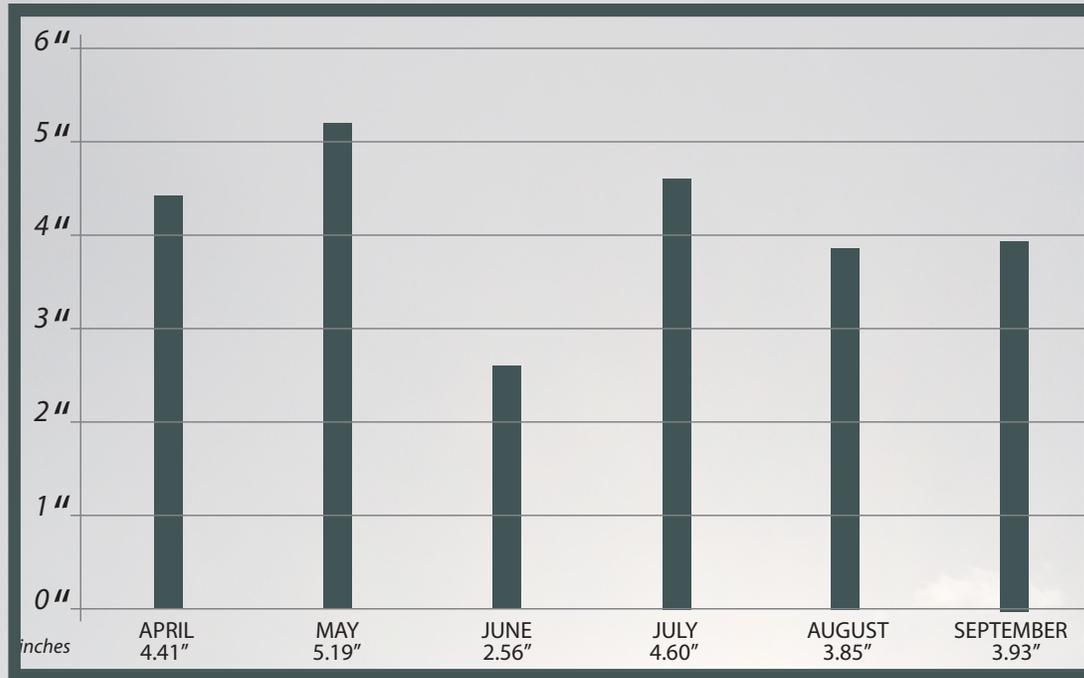
Biological surveillance, disease surveillance, product evaluations, field operations, and public education are included in this program.

“Tuscola County is one of four counties in Michigan with a formal, comprehensive mosquito control program.”



2014 WEATHER

Weather plays a very important role in determining our mosquito population. Above average snowfall amounts and large amounts of rain in the spring delivered an impressive hatch of spring floodwater mosquitoes in many parts of the County.



Rainfall totals reached over seven inches by the month of May.

We continued to see above average rainfall totals throughout June. On July 6th and 7th, three inches of rainfall in the lower portion of the County caused flooding

in several areas. On July 27th a severe storm caused heavy rain, localized flooding and damage.

“Weather plays a very important role in determining our mosquito population.”

We had high hopes for August to bring drier conditions. However that was not the case as we continued to receive rains that caused many interruptions in our ability to treat.



OVERVIEW:

The Biology Department, through the use of various mechanisms, attempts to identify mosquito population levels. This information is important to developing a suppression strategy, a critical Component in an I.P.M. approach. Additionally, the results of these collections may supply us with a means of monitoring certain mosquito borne diseases. Therefore, the comfort and safety of our citizens drive each of our activities.

TIMELINE: (Highlights)

- 3/11-12/14: Training and Testing (attachment A.)
- 3/17/14: Larval surveillance begins (first activity noted 4/1/14)
- 3/24/14: Assessment of properties requesting Long Drive status begins (see Long Drive)
- 4/8-9-10/14: Spring Larvicides are tested for efficacy. (Old and new lots are applied where larval activity is observed, controlled by adjoining pools left untreated. Results are observed and recorded. Six sites, and forty eight pool are involved. Conclusion: 92-100% suppression is achieved in treated pools.)
- 4/22/14 - 5/6/14: Adult mosquitoes trapping commences. (attachment B)
- 5/6/14: Adult mosquitoes trapping commences (attachment C)
- 5/13-14/14: Live trap testing of adulticide
- 6/4/14: Gravid traps and disease surveillance (attachment D.)
- 7/3/14: First corvid (Crow) is tested in-house. In addition to certain mosquito species, birds from the corvid family (Crows Blue jays and Ravens) can be early indicators of arbovirus activity.
- 7/21/14: Peak mosquito levels. June trapping catches were high but nothing compared to the summer hatch of late July. The spike followed some very heavy rainfalls, (of course) with light traps collecting over 1000 vexans per night.
- 8/21/14: M.S.U. confirms pool of pipiens/restuans has tested positive for WNV. Treatment options are enhanced.
- 9/3/14: All testing performed in-house
- 9/22/14: Trapping discontinued (see 2014 Trapping summary.)
- 9/24/14: 2014 collections results are recorded

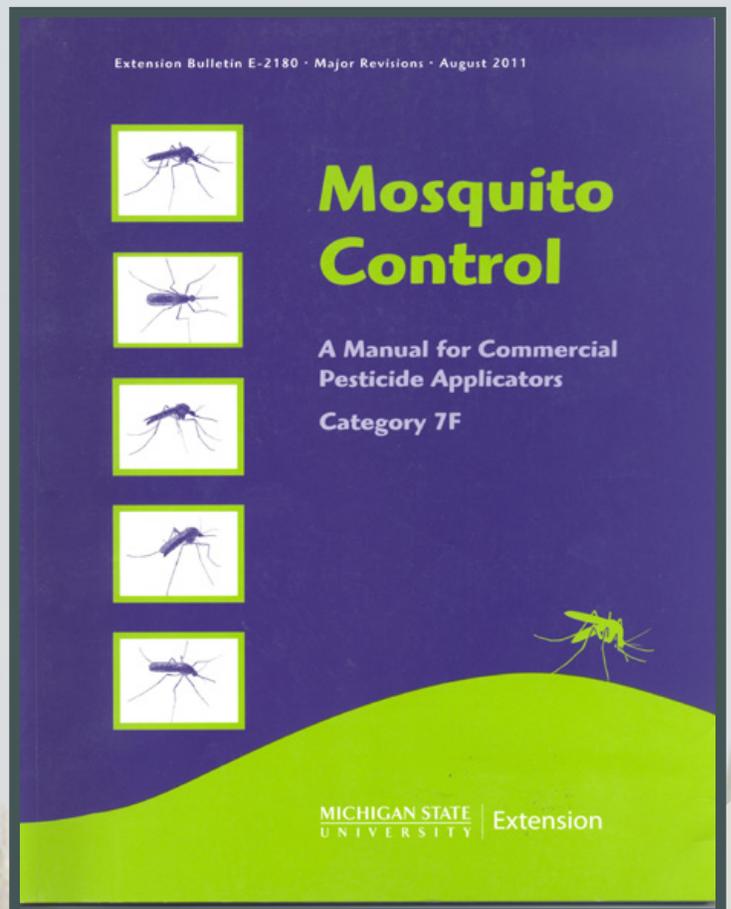
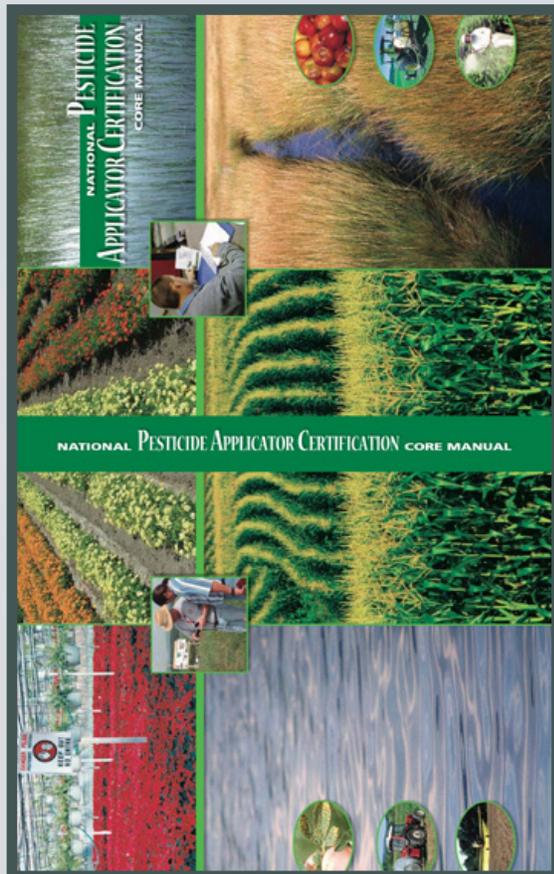


TRAINING AND TESTING

Attachment A.



After newly hired staff has been screened, study materials are distributed. Returning employees in need of re-credentialing are also included. After two to four weeks of “home study”, a mandatory day of review, elaboration and practice is provided. The following day, a Michigan Department of Agriculture representative oversees onsite testing. The successful result of this process is each candidate’s earning a MDA Certified Pesticide Applicator’s license (with a mosquito specific – 7F endorsement). Of course, the training has really just begun.



ULV CALIBRATION

Attachment B.

All truck mounted ULV's are set to deliver five ounces of adulticide per minute. Then, utilizing the Army Insecticide Measuring System (AIMS), the droplet sizes produced by each ULV are measured and calibrated. Following the label recommendations, the droplets are set to be delivered in a range that helps to ensure safety and efficacy.



MOSQUITO TRAPS

Attachment C.

New Jersey Light Traps are fixed in various locations throughout the County.

These remain the same, from season to season, supplying an historical perspective of mosquito populations.

They require an electrical source which produces the mode of attraction: a light source.

Unfortunately, many insects are drawn to light, making the sorting of mosquitoes from the rest of the catch a laborious activity.

“New Jersey Light Traps are fixed in various locations throughout the County.”



CDC traps are more mosquito specific, and useful for getting into remote areas.

CDC traps can give us a quick insight as to localized activity.



DISEASE SURVEILLANCE

Attachment D.

Gravid traps use highly organic water to lure egg laying mosquitoes.

Certain species prefer this type of medium; and since these are known to be involved in disease cycles - and have taken blood from a host - the female mosquitoes collected in these types of traps are desirable as potential indicators of disease activity.



The mosquitoes captured in all forms of traps are identified. Those species which are more likely to be involved in disease transmission are selected for testing. 110 pools (groups of the same type) were sent to the Insect Microbiology Lab at Michigan state University, While 30 others were tested in house using the Vector Test Kit.

“The female mosquitoes collected in these types of traps are desirable as potential indicators of disease activity.”



2014 MOSQUITO TRAPPING SUMMARY

Attachment E.

	MAY	JUNE	JULY	AUG	SEPT	SPECIES TOTAL
AEDES:						
canadensis	3333	2364	49			5746
cinereus	11	319	88	55	33	506
implicatus	107	290	12			409
japonicus		6	15	4	9	34
provocans	130	164	16			310
stim/fitch	795	2446	145	8		3394
triseriatus			3		3	6
trivittatus	38	470	465	471	136	1580
vexans	163	2423	4702	2349	923	10560
ANOPHELES:						
punctipennis	24	51	114	164	170	523
quadrimac.	18	171	726	614	965	2494
walkeri		54	197	42	92	385
CULEX:						
pipiens	167	426	591	501	291	1976
restuans	31	104	201	188	47	571
territans		7	22	34	23	86
CULISETA:						
inornata	5	7	3	4	3	22
minnesotae			2			2
morsitans		3	1		3	7
melanura	3		3			6
COQ. perturbans		129	159	14	9	311
UR. sappharina			4	3	3	10
PS. ciliata			5			5
PS. ferox			4			4
TOTAL FEMALES:	4825	9434	7527	4451	2710	28947
TOTAL MALES:	1442	6685	5522	1458	992	16099



OVERVIEW:

The purpose of mosquito control is two- fold. We attempt to control biting nuisance mosquitoes, so the citizens of Tuscola County can enjoy the many outdoor activities that our County has to offer.

The other aspect is to diminish the possibility of disease contraction by larviciding immature mosquitoes still in their aquatic environment, and adulticiding when a hatch has occurred.

We strive to maintain public use areas such as parks, campgrounds, trails and golf courses, keeping our citizens safe from disease carrying mosquitoes.

Residents may also request yard treatments for special events such as, weddings, parties etc. We also provide treatment for the many festivals that occur throughout the County.

TIMELINE (HIGHLIGHTS):

- March 17th begins open enrollment for Long Driveway Program
- March 24th biology techs, office staff and foremen returned.
- April 7th field technicians returned
- April 7th spring larviciding began (see Attachment F).
- April 21st open enrollment for Long driveway Program ended. (See Long Drive Page) County.
- April 25th Huron County Commissioners toured our facility.
- May 5th split shifts to begin training, new hires will ride with technician initially.
- May 6th finished MMD's on truck mounted ULV's
- May 19th began roadside fogging and yard treatments (see attachment H).
- May 21st began roadside ditch treatment (see attachment I).
- June 4th began the treatment of catch basins and sewage lagoons (see attachment J).
- June 7th began working seven days in response to large hatch over Memorial Day.
- June 14th began the first of fifteen scrap tire drives throughout the County. (See tire page).
- August 5th millage renewal for six years approved at rate of 0.65 mils, vote passed with 85%.
- August 11th began working with TSSF Architects on building plans for new insecticide storage and garage with work scheduled to begin in the spring 2015.
- August 18th prepared annual budget
- August 22nd college students left for season



SPRING LARVICIDING

Attachment F.

We begin in the early spring with the treatment of flooded woodlots. This is done with technicians using a hand spreader to deliver granular BTI or a backpack sprayer to de-

“Spring Larviciding is done with technicians using a hand spreader to deliver granular BTI or a backpack sprayer to deliver BVA oil to flooded areas.”

liver BVA oil to flooded areas. We utilize a citizen tracking database which allows us to keep a historical record of homeowners and locations throughout the County with woodlots that may need treatment in the spring.



Biology staff and larviciding crews conducted routine surveillance and quality control on 2,194 flooded woodlot sites that were treated during the 2014 season.



ADULTICIDING

Attachment G.

Tuscola County has twenty three townships as well the villages and cities. Each township is assigned a technician for roadside treatment.

“Treatment is conducted on a routine basis in all public use areas (parks, golf courses, rail trails, gun and archery clubs) using our Kawasaki Mule equipped with a ULV unit.”

areas (parks, golf courses, rail trails, gun and archery clubs) using our Kawasaki Mule equipped with a ULV unit. Tuscola County has many “No Spray “ areas (organic farms, beekeepers). Assigning technicians to specific townships allow them to become familiar with these special conditions. No spray signage is checked at the beginning of every

season to replace or post signs where needed. Treatment route maps are updated rou-

tinely during the season.

In 2014 we purchased a Pioneer battery operated backpack sprayer. It has been widely tested this season with great success. We plan to replace Colt model ULV sprayers with the Pioneer backpack as needed.



ROADSIDE TRUCK FOGGING

Attachment H.

TOWNSHIP	MILES DRIVEN	GALLONS USED	PRODUCT (PERM X 4-4)
AKRON	1545.40	210.05	
ALMER	215.20	44.99	
ARBELA	2044.10	376.60	
COLUMBIA	101.00	17.16	
DAYTON	2572.60	391.42	
DENMARK	518.40	134.39	
ELKLAND	1364.00	128.45	
ELLINGTON	1036.40	166.51	
ELMWOOD	677.40	97.29	
FAIRGROVE	303.60	54.19	
FREMONT	2124.50	383.67	
GILFORD	104.00	20.03	
INDIANFIELDS	1889.40	425.10	
JUNIATA	947.50	210.29	
KINGSTON	1597.60	254.11	
KOYLTON	1315.30	182.11	
MILLINGTON	1945.70	309.42	
NOVESTA	696.90	150.36	
TUSCOLA	956.80	189.82	
VASSAR	3003.38	619.98	
WATERTOWN	1405.90	334.15	
WELLS	1229.50	211.12	
WISNER	818.40	114.53	



ROADSIDE DITCH TREATMENTS

Attachment I.

TOWNSHIP	MILES	GALLONS	PRODUCT VectoBac 12 AS
AKRON	740.50	26.70	
ALMER	286.00	6.16	
ARBELA	687.70	17.90	
COLUMBIA	330.20	9.70	
DAYTON	711.20	17	
DENMARK	474.60	11.40	
ELKLAND	433.90	7	
ELLINGTON	440.70	8.28	
ELMWOOD	348.10	4.20	
FAIRGROVE	345.80	9.44	
FREMONT	733.10	12.72	
GILFORD	290.60	11.62	
INDIANFIELDS	612.00	11.36	
JUNIATA	447.90	7.38	
KINGSTON	288.20	4.70	
KOYLTON	589.50	15.60	
MILLINGTON	547.80	10.50	
NOVESTA	468.40	7.76	
TUSCOLA	495.80	10.38	
VASSAR	934.30	22.81	
WATERTOWN	525.00	11.80	
WELLS	559.00	11.50	
WISNER	298.70	10.92	



SUMMER LARVICIDING

Catch Basins - Sewage Lagoons

Attachment J.

Tuscola County is home to nine sewage lagoon sites. Many of these sites have been known breeding sites. Each of these sites was checked and treated if necessary throughout the 2014 season, using Liquid BTI (Vectobac 12 AS) or Granular BTI (VectoBac G).

Catch Basins are treated 2-3 times throughout the season depending on need using granular BS (Spheratax SPH 50).

“Tuscola County is home to nine sewage lagoon sites. Many of these sites have been known breeding sites.”

In addition, larviciding is also performed in the cross country ditches, flooded fields, and artificial containers as needed using BTI (VectoBac G).



LARVICIDING SITES

SITE	TREATMENT	MATERIALS
CATCH BASIN	2-3 TIMES YEARLY	BS SPHERATAX
ROADSIDE DITCHES	FOLLOWING RAINS	BTI (VECTOBAC 12AS)
COUNTY DRAINS	AS NEEDED	BTI (VECTOBAC 12AS)
SEWAGE LAGOONS	EVERY 8-10 DAYS AS NEEDED	BTI (VECTOBAC 12AS)
CONTAINERS	AS NEEDED	BTI GRANULES
PONDS	AS NEEDED	BTI
FLOODED FIELDS	FOLLOWING MAJOR RAINS	BTI OR BVA LARVICIDING OIL
SWAMPS	AS NEEDED	BTI



TIRE PAGE

In collaboration with the Tuscola County Recycling Center and various townships, we hosted 15 tire collection sites throughout the County.

TCMA hosted a tire trailer on July 12th with staff present to help load tires. We had a great turn out with many large oversize tires being collected from our area farmers.

We were also pleased to assist the Cass River Greenway organization in their annual Cass River clean-up. Volunteers used canoes to remove trash and tires from the river and its banks.

Many tires were collected and sent to be recycled with the trailer provided by TCMA.

We will continue the satellite tire collection sites in 2015, with plans for fifteen sites to be scheduled throughout the County.

“We will continue the satellite tire collection sites in 2015, with plans for fifteen sites to be scheduled throughout the County.”



GARAGE NEWS PAGE



During the 2014 mosquito season, Tuscola County Mosquito Abatement's twenty truck fleet covered 182,895 miles. All trucks, ULV's and hand held equipment received routine maintenance and repairs that included: oil changes, tires, ULV repairs, ditch tank repairs, spreader repairs, mule(ATV) repairs, mosquito trapping equipment repairs and building and grounds maintenance.



LONG DRIVEWAY PROGRAM

We realize that many homes in Tuscola County are set back from the country road, and subsequently, shielded somewhat from the effects of the road-side adulticiding operations. If requested by the owners, their property will be reviewed to see if it meets the criteria for the Long Drive program. Property with a house (primary residence) meeting the established requirements may be placed on the long driveway list. The driveway in question will be marked by a long drive stake that has a reflective band on top. These stakes will be placed by the agency; however homeowners are asked to remove them in the fall to avoid damage or loss from snow removal equipment, and then replaced in the spring. These stakes aid our technicians in finding the drive during the nighttime treatment. These drives are also marked on our spray maps.

The basic criteria for a home to be placed on the long drive list are:

- There must be a primary residence on the property and the front of the home must be 300 feet away or greater from the edge of the roadway
- There must be an adequate turnaround for our truck that does not include driving across any lawn areas.
- The driveway must be passable with two wheel drive vehicles.
- The drive area must have significant vegetation providing areas of mosquito harborage.

Other factors such as sensitive locations, for example No sprays or Organic Farms adjacent to the property, may exclude the property from treatment except under specific conditions.

In 2014 we held an open enrollment period for the long driveway program, from March – May adding 27 residents. Tuscola County currently has 252 residents on the Long Drive Program.



PUBLIC EDUCATION

The goal of TCMA's public education program is to make residents informed of mosquito habitat and life cycle. This will help citizens be aware of how to prevent and eliminate breeding sites for disease carrying mosquitoes. Informed residents can be integral in creating a safe and disease-free environment.

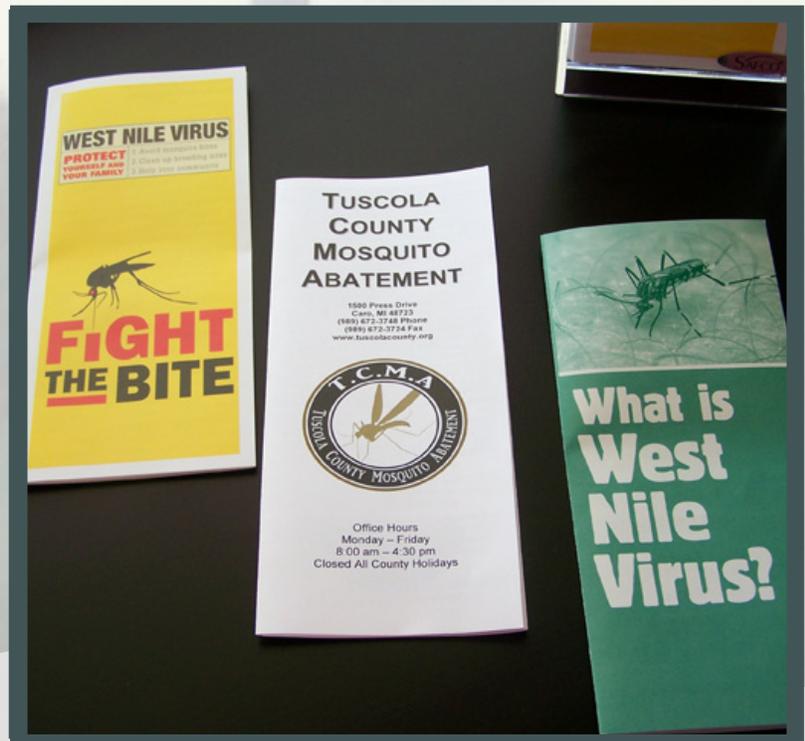
When mosquito populations are high, residents can identify the source or reason for the increase. They will also be aware of the steps they can take to reduce mosquito related problems and prevent breeding sites on their property.

“The goal of TCMA’s public education program is to make residents informed of mosquito habitat and life cycle. This will help citizens be aware of how to prevent and eliminate breeding sites for disease carrying mosquitoes.”

This task is completed in many different ways.

Some of the most important ways TCMA distrib-

utes this information are through citizen phone calls to our office, and face-to-face contact with our technicians, as well as our Facebook page. The technicians also carry various brochures with them and are encouraged to distribute them to homeowners.



MEMBERSHIP

TCMA staff are required to obtain and maintain licensing through the Michigan Department of Agriculture (MDA) as certified pesticide applicators in both the Core Category and 7f (Mosquito Control). To assist our technicians and ensure proper training, a two day training/ seminar will be held March 9th and 10th, with MDA available onsite for testing the second day.

In order to stay abreast of current developments, the permanent staff of TCMA are also encouraged to attend conferences, classes, and seminars re-

lating to mosquito biology and control. TCMA's Technical Advisory Committee (TAC) also provides new insight and important data in the areas of Biological Environmental Sciences. TCMA permanent staff also maintain memberships and are active in the Michigan Mosquito Control Association (MMCA) and the American Mosquito Control Association (AMCA).

“In order to stay abreast of current developments, the permanent staff of TCMA are also encouraged to attend conferences, classes, and seminars relating to mosquito biology and control.”



2015 HIGHLIGHTS

- Begin construction on new insecticide storage and garage
- Replacing some of the Colt model ULV sprayers with Pioneer Battery Backpacks
- Hiring Gavin Greer as a biology technician/apprentice.
- Scheduling Tire Collections
- Remodel of locker room and addition of bathroom
- Review and Testing for new hires and those re-certifying



2014 TCMA CREW





<http://www.tuscolacounty.org/mosquito>

TCMA · 1500 Press Rd · Caro, MI · 48723 · (989) 673-3748