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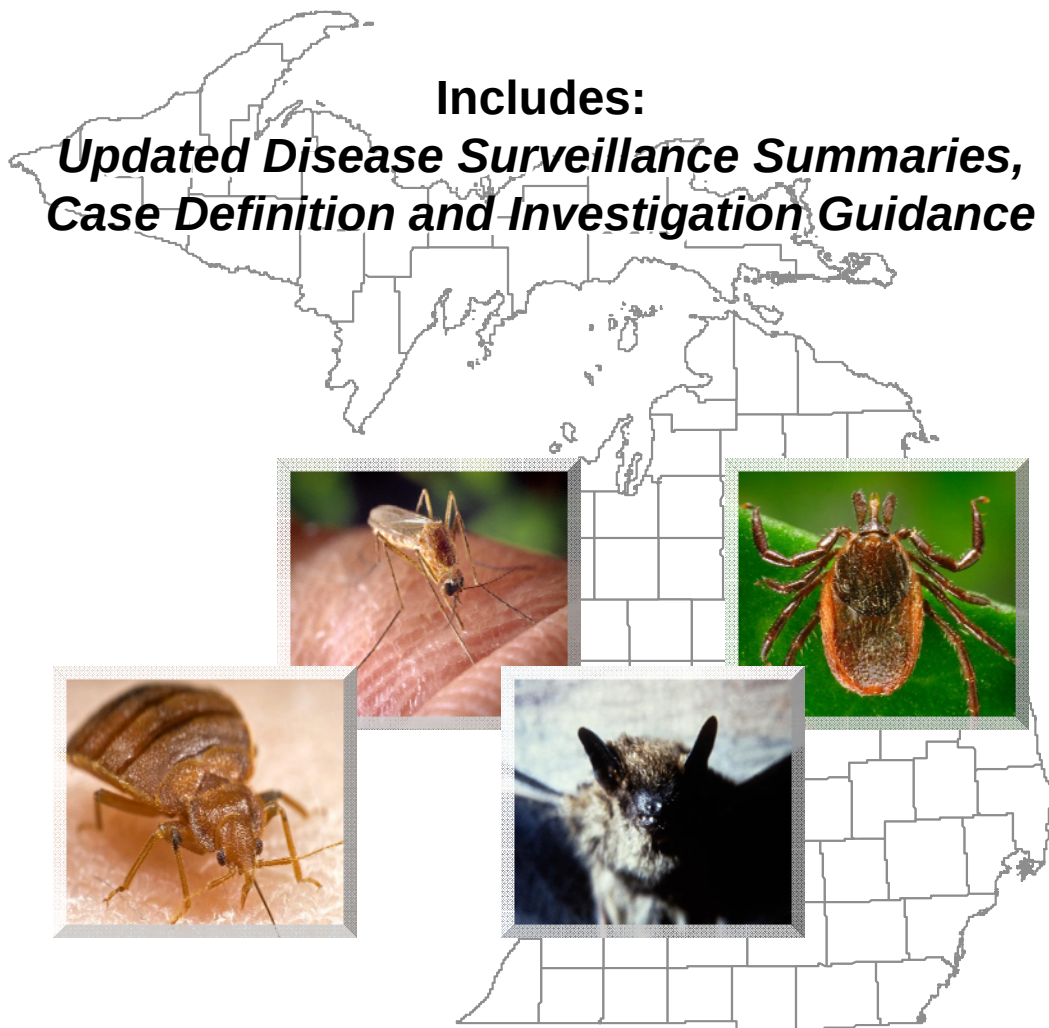
Online At:

[http://www.michigan.gov/
emergingdiseases](http://www.michigan.gov/emergingdiseases)

2008 Zoonotic and Vector-Borne Disease Surveillance Report

Includes:

*Updated Disease Surveillance Summaries,
Case Definition and Investigation Guidance*



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2008 Michigan Rabies Surveillance Report

Summary

Between January 1, 2008 and December 31, 2008, the Michigan Department of Community Health's Bureau of Laboratories (MDCH BOL) received 3,836 specimens for rabies testing. Of these, 79 (2.1%) were positive for rabies. In contrast, in 2007, 3,863 specimens were submitted for testing and 210 (5.4%) positive animals were detected. Demand for rabies testing at the BOL remained historically high and comparable to the number of specimens submitted in 2007, but the proportion of positive specimens was smaller.

Animals testing positive in 2008 include 70 bats, six skunk, two fox and one cat. Bats were again the species most often submitted for rabies testing (1,834), followed by cats (967) and dogs (731). All rabies positive terrestrial species were infected with the North Central skunk-strain. Southeast Michigan remains the focus of spill-over of this terrestrial strain of rabies into other wildlife and unvaccinated domestic animals.

Figure 1 **Rabies Positives by Month: 2006 - 2008**

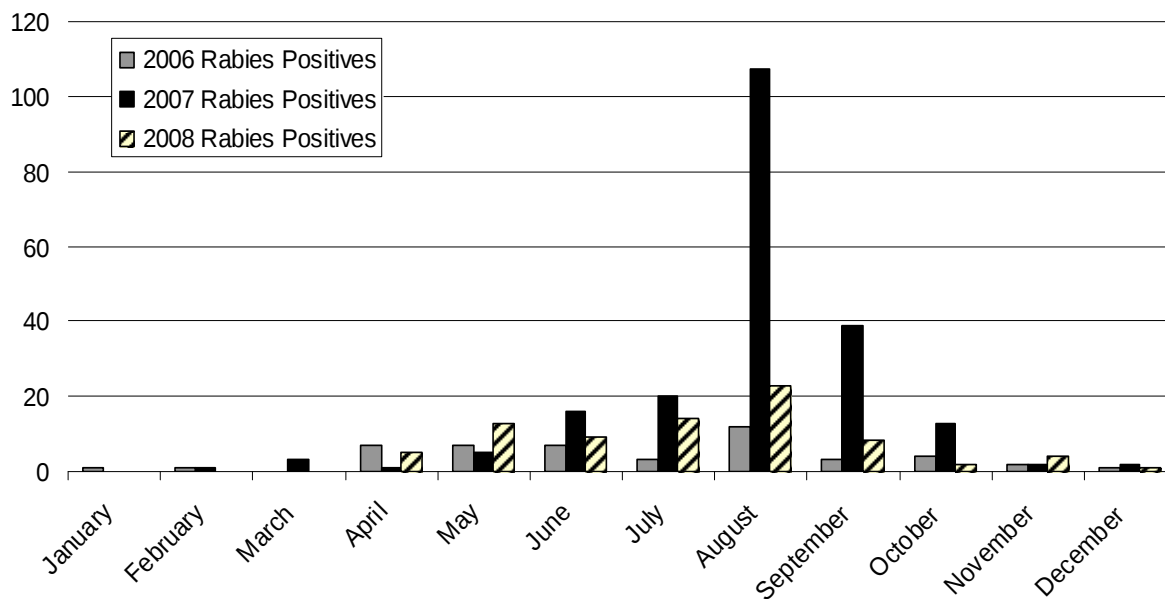


Figure 1: Total rabies positives by month in 2008 reflected a return to more "typical" baseline rates versus the dramatic increase seen in 2007. In 2007, the MDCH Lansing Lab assumed rabies testing for the City of Detroit Lab, and 2008 also saw the introduction of rabies testing capacity at the MDCH Loaboratory in Houghton. The volume of submissions from 2007 to 2008 has remained consistent.

A total of 113 raccoons were submitted for public health testing, with no positive animals identified. An additional five fox and nine raccoons (lacked human or pet exposure) were tested by the United States Department of Agriculture's Wildlife Services (USDAWS), and none were rabies positive. Michigan remains free of raccoon-strain rabies, but ongoing surveillance for this strain remains important. In addition to public health testing of raccoons that bite humans and unvaccinated pets, the MDCH BOL is interested in testing both unusual-acting raccoons or any that have interacted with vaccinated pets. Health departments and animal control agencies are encouraged to submit these animals for rabies testing.

Rabies Surveillance Summary (Continued)

Figure 2 **Bats Tested vs. Percent Rabies Positive**

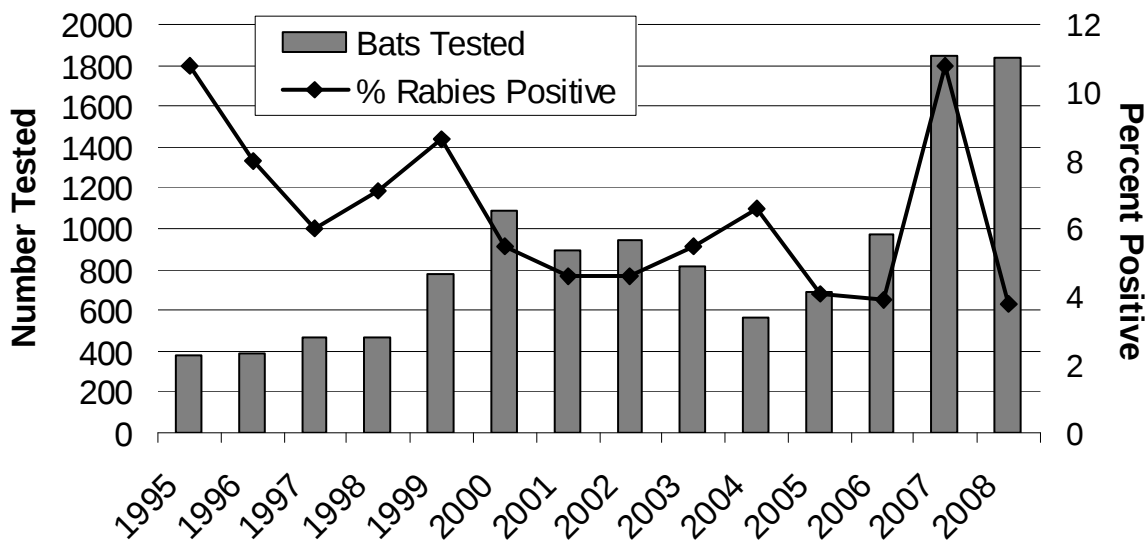


Figure 2: As can be seen in the graph above, the rate of rabies positivity is not correlated with increased testing volume. The bars (left Y axis) represent total bats tested and the line (right Y axis) represents the % of bats testing positive for rabies.

Figure 3 **Rabies Testing By Species**

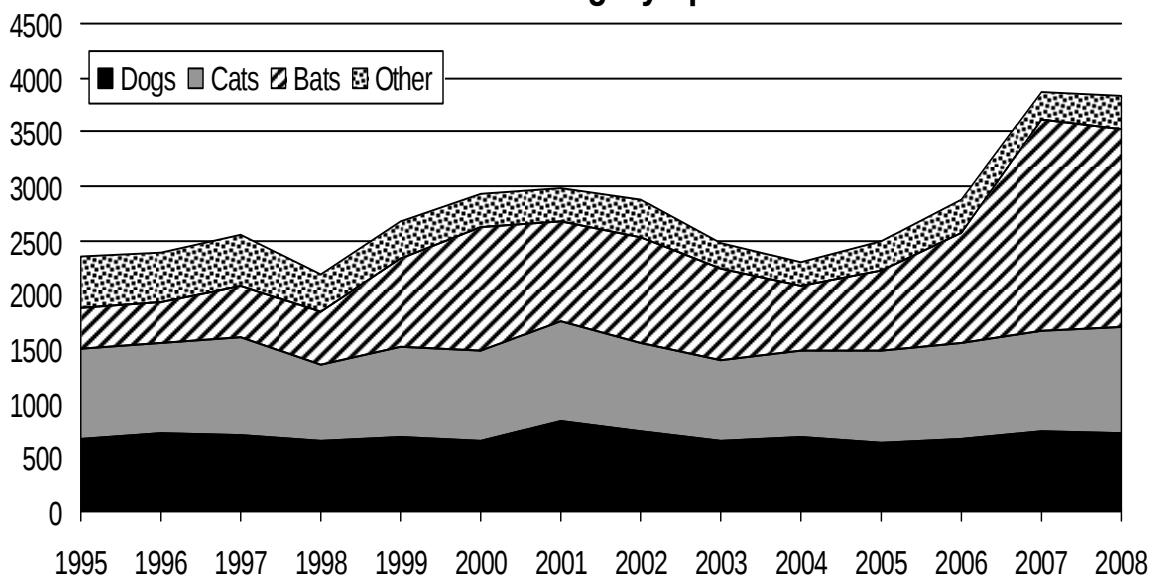


Figure 3: Increases in bat submissions can be seen from 2006-2008, compared to steady submissions of domestic animals and others. In 2008, rabies testing included increased bat submissions. A total of 1834 bats were tested in 2008, which is similar to 2007 submission, but is an almost 100% increase over previous years. In 2008 rabies testing also included 730 dogs, 967 cats, and 304 "other" species (skunks, raccoons, livestock, etc.).

All Terrestrial Animal Rabies Cases in Michigan: 2003 - Present

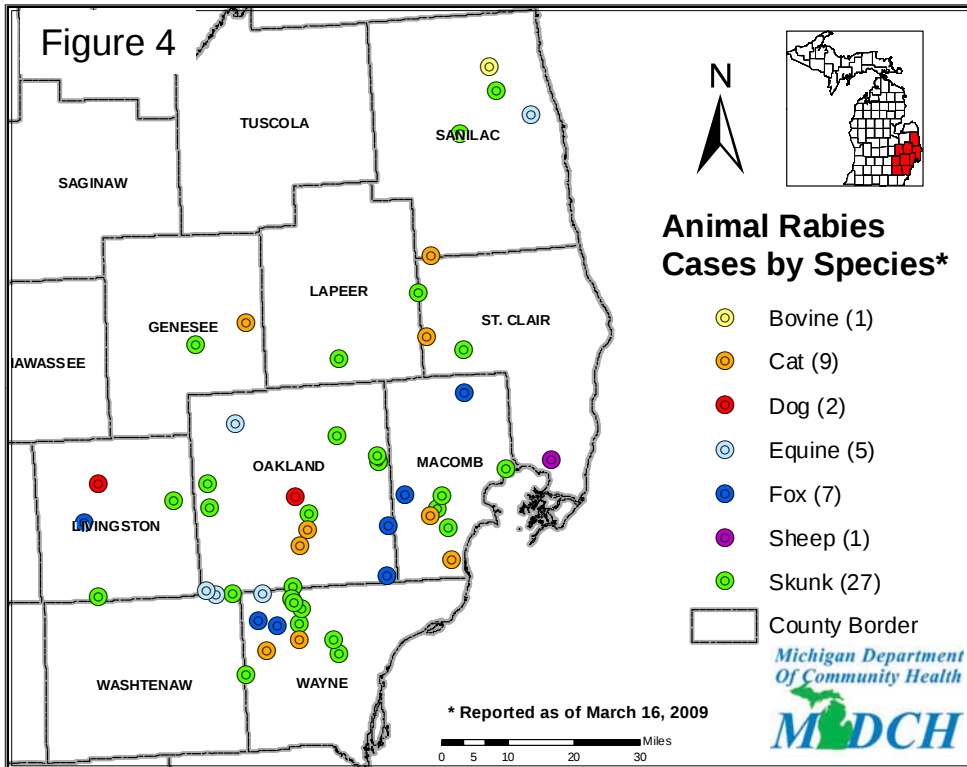


Figure 4: Geographically, bat rabies is generally wide-spread across the Lower Peninsula of Michigan, although cases do occur in the Upper Peninsula. As can be seen in the map above, terrestrial rabies in wild and domestic animals is mainly restricted to the southeastern region of the state.

Pop Quiz!!

1. Which animal species below is not considered likely to carry rabies and will not be tested except by special arrangement with MDCH Laboratory?

2. Which animal is an exception to the above rule?



see answers below

What Would You Do?

Animal exposures generate many calls to the local health departments, particularly in the spring and summer months. Often the situations are far from simple! Test your knowledge with the following example:

Q: An individual received rabies PEP because of a bat exposure. After the series was completed, the person had another exposure where rabies PEP was indicated. The physician wants to know how to handle this second exposure. Is checking a rabies titer an appropriate next step?

A: No, rabies titers are never used to make a decision about whether to administer rabies PEP. Titers are indicated in the following circumstances:

- To determine if a person has developed a response to a vaccination series.
- To determine if a vaccinated person in a high-risk occupation needs a booster vaccination.

In this situation, if a previously vaccinated individual has a subsequent exposure where rabies PEP is indicated, then this person is considered "previously vaccinated" and should receive the abbreviated rabies PEP series of two doses of vaccine administered on day 0 and 3, no RIG should be administered. If you are not sure what advice to give to a healthcare provider, please feel free to contact MDCH for assistance.

Answers: E (mice & rats), C (Woodchucks)

ALERT – Supplies of rabies post-exposure vaccine remain limited. Please follow these steps when assessing the need for rabies post-exposure prophylaxis:

1

Consult the rabies PEP Protocol for People Exposed to Mammals or the ACIP Human Rabies Prevention guidelines to determine whether there has been a potential rabies exposure. (Click Links Below)



[PEP Protocol for People Exposed to Mammals](#)



[MMWR/ACIP Guidelines](#)

2

Since PEP is an urgent medical issue but not an emergency, it can be delayed until animal rabies testing or clinical observation is completed: Determine whether an animal is available for testing or observation.

3

Call your local public health department to discuss individual exposure, risk assessment, and to coordinate animal testing or observation if possible. If your local health department is unavailable, please call MDCH Communicable Disease staff (517-335-8165 regular hours) (517-335-9030 after hours) directly.

4

If risk assessment indicates the need for PEP, contact your Novartis distributor to obtain RabAvert®, or MDCH staff to obtain access code for Sanofi-Pasteur product, Imovax®.

Rabies Vaccine Shortage

In 2008, the nation was faced with a tight supply of human rabies vaccine. There are only two manufacturers that currently provide rabies vaccine to the U.S. market, Sanofi-Pasteur (Imovax®) and Novartis (RabAvert®). In the summer of 2008, both companies experienced difficulties in meeting the demand for rabies vaccine, resulting in the need to limit the use of rabies vaccine to instances in which it was clearly indicated. In order to achieve this, the companies instituted measures that required physicians to consult with public health prior to administering rabies vaccine to individuals potentially exposed to rabies.



The timing of the shortage was unfortunate (during peak demand for rabies vaccine), but did provide local and state public health authorities with an opportunity to reinforce rabies post-exposure protocols with physicians and emergency room personnel. These include facilitating timely testing of rabies suspect wildlife or domestic animals, 10-day confinement/observation of healthy dogs, cats, and ferrets that bite people, and the prudent use of rabies post-exposure treatment in situations where it is indicated and the animal is not available for testing.

The vaccine supply has recently improved. The Novartis vaccine RabAvert® is available without restrictions for post-exposure treatment. In addition, RabAvert® is also now available for pre-exposure vaccination for those with an occupational risk as well as for travelers to rabies endemic countries. Vaccine can be obtained from Novartis through typical wholesale suppliers. Sanofi-Pasteur continues to provide for Imovax® vaccine for post-exposure treatment only, following risk assessment from a state or local health authority.



Request to Update Rabies Contact Persons

Ideally, we request each county designate a person(s)

COUNTY: _____

PRIMARY CONTACT (please print legibly)

Name:	
Address:	
City:	Zip:
Telephone: ()	
Fax: ()	

SECONDARY CONTACT (please print legibly)

Name:	
Address:	
City:	Zip:
Telephone: ()	
Fax: ()	

For multi-county jurisdictions, please coordinate the response from your jurisdiction.

Questions may be directed to MDCH at 517-335-8165

PLEASE RETURN VIA FAX TO: 517-335-8263 by April 24, 2009

Thank you!

2008 Michigan West Nile Virus Surveillance Report

West Nile virus (WNV) has become endemic in Michigan following the first identification of the virus in the state in 2001. This document contains detailed information about the 2008 human, bird, and mosquito data collected using various active, early warning systems, and passive surveillance for human cases.

Case Demographics

Michigan reported 17 cases of WNV in 2008 (4 cases of WN fever; 13 cases of WN neuro-invasive disease) with no fatalities. Asymptomatic or mild illness probably accounts for many more unreported cases. West Nile virus is primarily an urban/suburban phenomenon in Michigan with more than half of cases in 2008 being reported from Southeast Michigan's Detroit Metro area (Figure 5). West Nile infections are most prevalent in the months of August and September, corresponding with the peak of the vector mosquito season (*Culex species*). In 2008, 88% of cases reported onset of illness during these two months (Figure 6). West Nile virus can infect anyone regardless of age, but serious disease (neuro-invasive) is rare, and occurs primarily in those over the age of 50 (Figure 7).

Figure 5

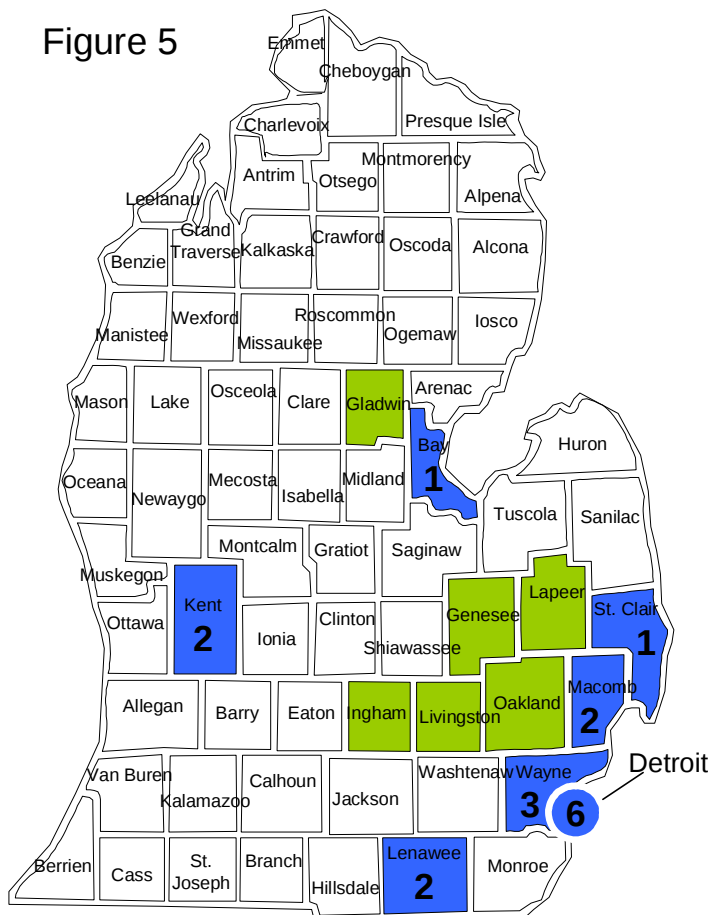


Figure 5: Geographic distribution of WNV cases in Michigan for 2008

-  Counties with a **positive** WNV human case (includes probable and confirmed cases, all clinical syndromes)
 Counties with human testing activity **negative** for WNV

Figure 6

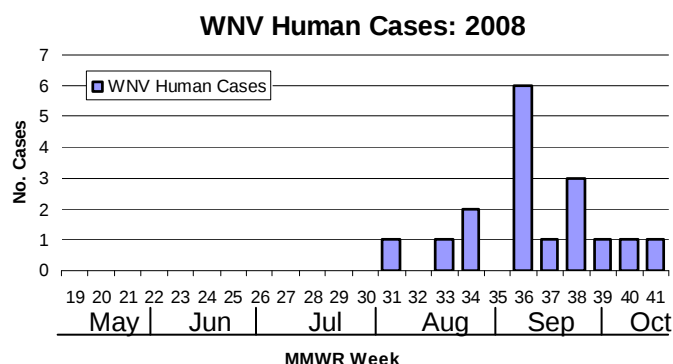


Figure 6: 2008 WNV Epi-curve. As can be seen in the graph above, peak human WNV incidence occurred during August and September (88% of cases). This corresponds with peak avian and mosquito WNV infection during the weeks preceding human illness.

2008: Case Summary

- 17 cases
- 0 fatalities
- Age range: 2 — 86 years
- Average age: 56 years
- Males: (12) 71% Females: (5) 29%
- Onset dates of illness:
 - July 24 — October 6
 - 88% of case onsets during August and September

Figure 7 West Nile Virus Age Distribution: Michigan, 2004-2008

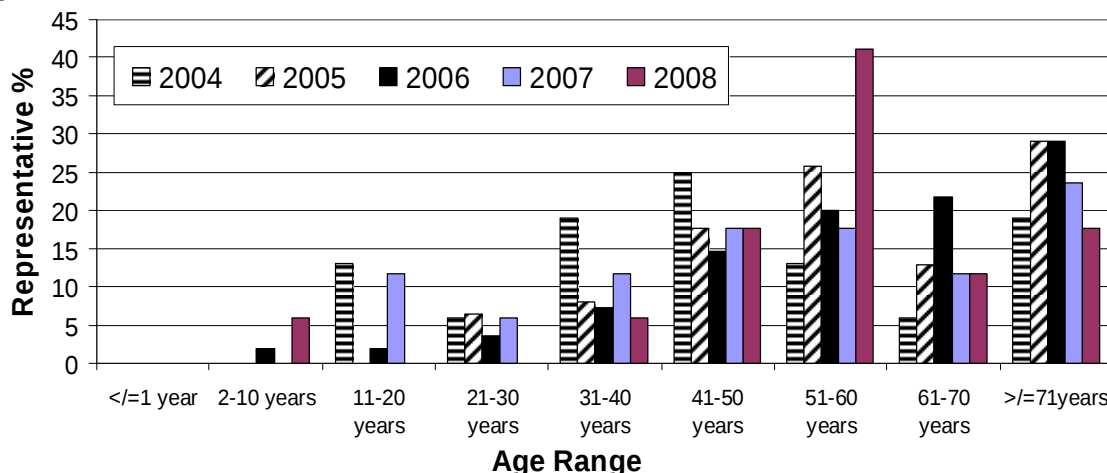


Figure 7: Age distribution of WNV cases (all clinical syndromes) in Michigan from 2004-2008. Serious WNV disease is seen more often in persons over 50 years of age.

2008: Case Clinical Profile

WEST NILE FEVER

- 4 cases
- Age range: 38-58 years
- Average age: 48 years
- Males: (3) 75% Females: 1(25%)

WEST NILE NEURO-INVASIVE DISEASE

- 13 cases
- Age range: 2-86 years
- Average age: 57 years
- Males: (9) 69% Females: (4) 31%

As noted earlier, serious WNV illness is infrequent and disease is estimated to occur in less than 1% of those bitten by an infected mosquito. However, people over age 50 are at greater risk of serious neuro-invasive disease. Cases identified by MDCH are predominantly neuro-invasive cases, as persons with mild illness are not routinely tested for WNV. The total number of infections due to WNV, therefore, is underreported.

Ecologic Indicators

The cycle of West Nile virus infection in the environment is contingent upon three main factors: climate or environmental conditions, susceptible host populations, and vector populations.

Each of these factors contributes to the overall risk of human infection from year to year. Years that have above average temperatures and below average rainfall are particularly favorable for increased vector populations. This may be due to several factors. One important factor is that the vector mosquito in urban areas breeds in containers and catch-basins. If these containers are not routinely flushed, they accumulate organic matter which is attractive to mosquitoes for egg laying and serve as sustenance for larvae. Insect development is also temperature dependent, with higher temperatures leading to faster development.

Corvidae (including crows, blue-jays, and ravens) are highly susceptible to WNV infections making them an excellent sentinel indicator of WNV activity in the environment. Many other bird species also play a role in the persistence of WNV, but these species eventually clear the infection, and do not succumb to disease as often. During Michigan's seminal WNV epidemic year, 2002, reports of dead corvids preceded reports of human illness by several weeks. This trend was also seen in 2008. (Figure 8, 9)

Figure 8 **Sick/Dead Corvids Reported vs. WNV Human Cases - 2002**

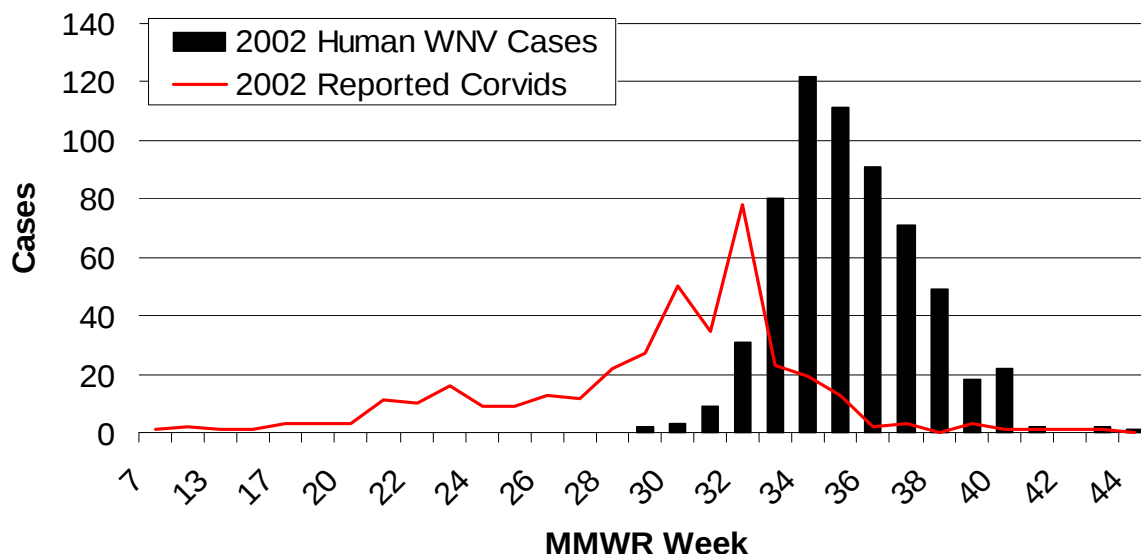


Figure 8: Increases in reports of sick or dead corvids preceded the detection of human illness in 2002 by more than 1 month. If increasing numbers of birds are being reported by the public in a locality, it is recommended that increased surveillance, public outreach, and mosquito control be considered.

Corvid surveillance

Corvid surveillance is the cornerstone of WNV surveillance for the State of Michigan. This is due primarily to the ease of sampling dead birds, and the relatively low cost of collection and laboratory testing. Using corvids as early indicators of WNV activity can give local authorities time to target prevention measures. Citizens can report sightings of dead or diseased corvids online or to their local health department (if participating), or to the Emerging Diseases website. Wildlife species other than corvids can also be reported via this method. Laboratory testing of corvid samples is performed at the Michigan State University Diagnostic Center for Population and Animal Health (DCPAH). Specimens are collected by swabbing the oral cavity of a bird and submitting the swab for PCR analysis.

REPORTING SICK/DEAD WILDLIFE

Wildlife species can be an important and early indicator of West Nile virus activity in an area.

Citizens should be directed to the State's [West Nile Virus](http://www.michigan.gov/westnilevirus) page to report sick/dead wildlife:

www.michigan.gov/westnilevirus

Reports are compiled on a weekly basis and maps and tables are posted to the website for the most up-to-date picture of potential West Nile risk.

Department of Natural Resources
Michigan.gov Home | DNR Home | Links | Site Map | Contact DNR | Ask DNR

SICK OR DEAD BIRD AND MAMMAL OBSERVATION REPORT

Instructions: This form can be used for all disease surveillance purposes. Please complete and submit one report for **each** species of animal seen at **each** observation. Due to funding reductions, birds will be accepted by the DNR for gross (visual) examination, but further testing, including West Nile Virus (WNV) testing, will not be routinely performed. Please see the WNV instructions page for more information. Testing for Avian Influenza will only be performed when there is a die-off of 6 or more water birds of the same species at one location or under special circumstances.

Note: Contact information will only be used for follow-up observations and will not be released. Although we try to answer questions submitted, we do not contact every person submitting a report. For further information please call the DNR Wildlife Disease Lab at 517-336-5030.

Please fill-out the report as completely as possible. All data requested are important.

DATE OF OBSERVATION: Month Day Year

LOCATION OF OBSERVATION: (see notes)

Zip Code: Nearest City, Town or Village:

County: Street Address:

Nearest Crossroads:

ANIMAL(S) OBSERVED:

Class: Species: (select only one) If "Unknown," please describe the animal or

Class: Species: (select only one) If "Other," please enter the species:

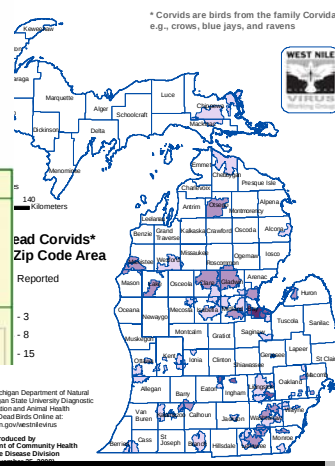


Figure 9 Michigan 2008: Ecologic Indicator Species and Human WNV Epi Curve

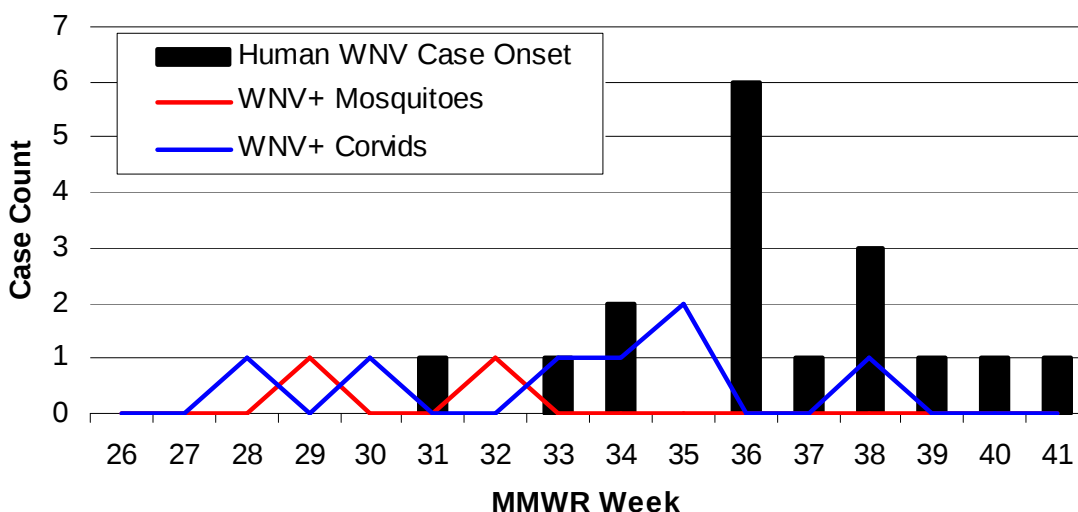


Figure 9: Bars represent WNV human case onset; the red line represents WNV positive mosquitoes; the blue line represents WNV positive corvids. Detections of WNV in these indicator species precedes peak human WNV activity by several weeks in 2008.

Mosquito surveillance

Effective Integrated Pest Management (IPM) vector-control programs can reduce human illness during outbreak years, and provide the necessary surveillance tools for preemptive detection. MDCH has always supported and encouraged community level vector-control activities. Michigan's mosquito abatement districts are decentralized and depend largely on community level awareness and education to provide funding for activities. The West Nile virus outbreaks of 2001-2002 raised this level of awareness, and spurred communities to conduct surveillance and control activities with the assistance of MDCH and its partners. Proactive activities have been undertaken in a number of communities, and locally funded, long-term mosquito control has been enacted in several new townships.

In 2008, over 6000 mosquito pools were tested by mosquito control districts in the "thumb" area of the state, as well as several smaller municipalities in SE Michigan (Table 1, Map following page). High *Culex* mosquito populations, and identification of positive mosquito pools preceded peak human WNV illness by several weeks (Figure 10).

Table 1 – Mosquito testing in Michigan, 2008

Arbovirus Tested	Pools Tested	Total Mosquitoes Tested	Positive Pools
TOTALS	6154	81569	4
West Nile Virus (WNV)	3272	43249	2
St. Louis Encephalitis (SLE)	1333	7054	0
Eastern Equine Encephalitis (EEE)	1343	30821	2
La Crosse (LAC)	206	445	0

Results of mosquito testing are posted to Michigan's Emerging Diseases Website bi-weekly during WNV season (www.michigan.gov/emergingdiseases). Tables and maps are monitored by the public and by interested jurisdictions to assess risk of WNV infection in areas where surveillance is being conducted. In 2008, mosquito pools from 8 counties were submitted for testing. A total of 81,569 mosquitoes from 6,154 pools were tested, with 2 pools testing positive from 2 counties (Table 1). Two mosquito pools were infected with Eastern Equine Encephalitis, but no human cases were reported.

While mosquitoes are arguably the most specific indicator of WNV risk in a given region, the high cost of surveillance and control makes it impractical for jurisdictions without organized mosquito control to use this method. Interested jurisdictions, however, may find good results by larviciding catch basins early in the season, which is a low-cost method of preventing high mosquito populations.

Figure 10 Michigan 2008: Culex Mosquitoes and WNV

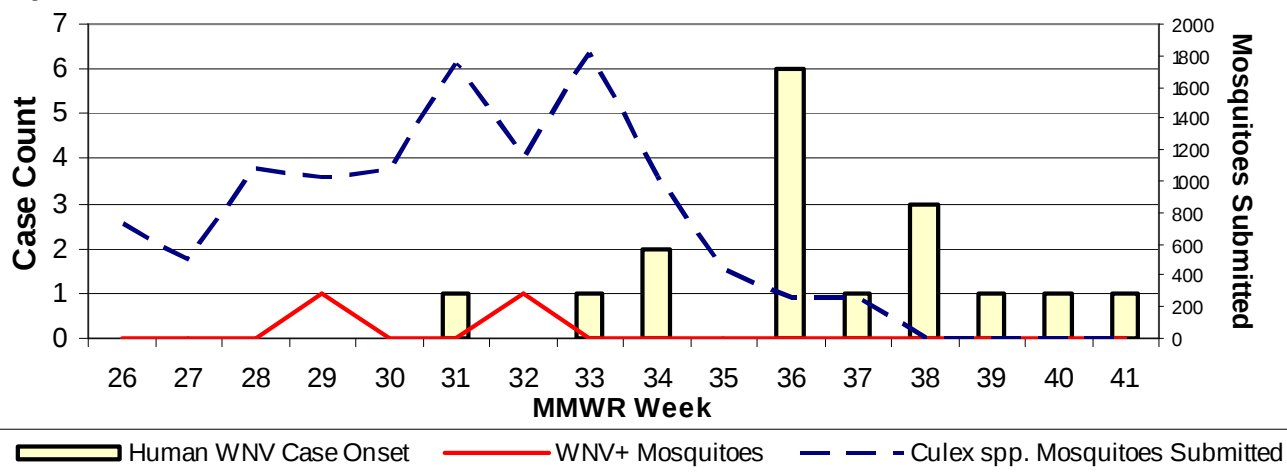
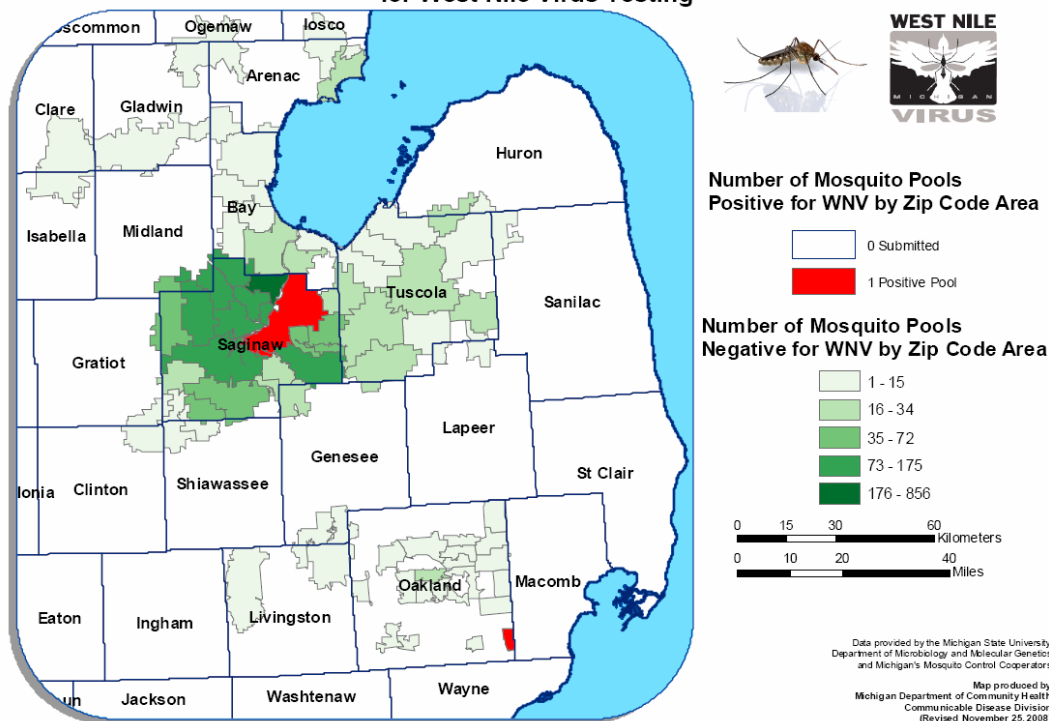


Figure 11 - 2008 Final -
Mosquitoes Submitted by Public Health and Mosquito Abatement Districts
for West Nile Virus Testing



MMCA Members include Michigan's public and private mosquito control personnel. The volume of testing and surveillance for mosquito-borne diseases to protect public health could not be accomplished without them.

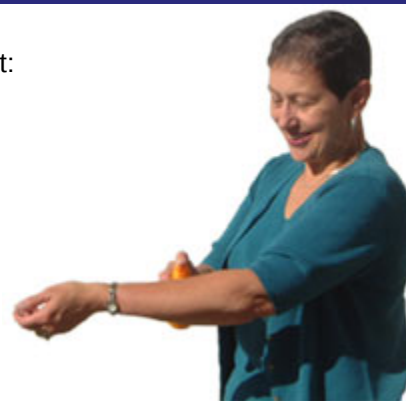
For More Information and Publications visit them on the web at:

<http://www.mimosq.org>



The Centers for Disease Control and Prevention (CDC) Fight the Bite campaign can be accessed at:

<http://www.cdc.gov/ncidod/dvbid/westnile/>



Avoid mosquito bites by applying insect repellent when spending time outdoors. Use repellent safely. Always read and follow product instructions.

Five Common Myths about West Nile Virus

Myth #1: There's not much I can do about West Nile virus.

Truth: There is a lot that you, personally, can do to reduce your chance of West Nile virus infection.

- Reduce the number of mosquito bites you get. Make a habit of using insect repellent with DEET when outdoors. Spray repellent on exposed skin and clothing. Get the details about [safe repellent use](#).
- Prime mosquito-biting hours are usually dusk to dawn. Pay special attention to protection during these hours, or avoid being outdoors.
- You can reduce the number of mosquitoes around your home. Mosquitoes breed in standing water, so check your yard once a week: get rid of containers that aren't being used, empty water from flower pots, change water in bird baths and maintain clean gutters.
- Make sure window and door screens are in good condition. Have an older neighbor or family member? See if they need help installing or repairing screens.

Myth #2: Kids are at the most danger of getting sick from West Nile virus.

Truth: People over 50 are at the highest risk for developing severe West Nile disease.

- Relatively few children have been reported with [severe West Nile Virus disease](#). By contrast, most of the deaths due to WNV during 2002 were among people over 50 years old. Half of those deaths were among people over 77 years old.
- It is always a good idea for children to avoid mosquito bites, but it's also important for adults - especially older adults - to take steps to avoid mosquito bites. [Click here for suggestions on how to avoid mosquito bites](#).

Myth #3: It's only people who are already in poor health who have to worry about West Nile virus.

Truth: Healthy, active older adults who spend time working and exercising outdoors have been affected by severe West Nile virus infection.

- Being over 50 is a risk factor for developing severe West Nile disease if infected with the virus. There is a risk of getting mosquito bites while leading an active life outdoors. This doesn't mean you have to stay inside - it does mean that it's important to use [repellent](#) when you go outside.

Myth #4: Repellents containing DEET are not safe.

Truth: Repellents containing DEET are very safe when used according to directions.

- Because DEET is so widely used, a great deal of testing has been done. When manufacturers seek registration with the US Environmental Protection Agency (EPA) for products such as DEET, laboratory testing regarding both short-term and long-term health effects must be carried out.
- There are products with different strengths (percentage of DEET) available. The longer the protection you need the higher percent of DEET needed.
- Repellent with DEET can be used for both adults and children, according to directions
- Click here for much more information on [using repellents safely](#).

Myth #5: As long as my area has a mosquito control program, I don't have to worry about using repellent.

Truth: Mosquito control activities don't eliminate every mosquito, so personal protection is still important.

- Public activities, such as using products to kill mosquito larvae and adult mosquitoes, are one part of control. Personal protection, such as using repellent, keeping window screens in good condition, and control of household breeding sites are other important steps.
- Collaboration between the community, the family and the individual is needed to achieve the best prevention of West Nile virus infection.

2008 Michigan Lyme Disease Surveillance Report

Lyme disease is transmitted by ticks and is the most commonly reported disease associated with tick bites in the United States. More than 21,000 cases were reported to the Centers for Disease Control and Prevention (CDC) in 2007. Illness is caused by a bacteria (*Borrelia burgdorferi*) that infects a variety of small mammals in the Upper Midwest and Northeastern United States, and is then transmitted to people through the bite of an infected Blacklegged tick (*Ixodes scapularis*). In Michigan, Lyme disease in ticks and people has historically been isolated to the Western Upper Peninsula, but is now appearing in the western counties of Lower Michigan.

In the early stages, most infected people will experience a “flu-like” illness that includes fever and body aches. Up to 70% of infected persons will also present with a “Bull’s-eye” rash, erythema migrans, around the site of the tick bite 3-30 days after exposure. The rash expands over time, with no pain or itching, and will resolve without treatment.

Early symptoms may include:

- Headache
- Spreading Rash
- Nausea
- Aching Joints and Muscles
- Fever
- Fatigue

If not treated, some people may develop complications involving the heart and/or nervous system. Specific disorders may include: various degrees of heart block, nervous system abnormalities such as meningitis, encephalitis and facial paralysis (Bell’s palsy), and other conditions involving peripheral nerves, painful joints, tendons, or muscles may also be noted during this stage of the disease.



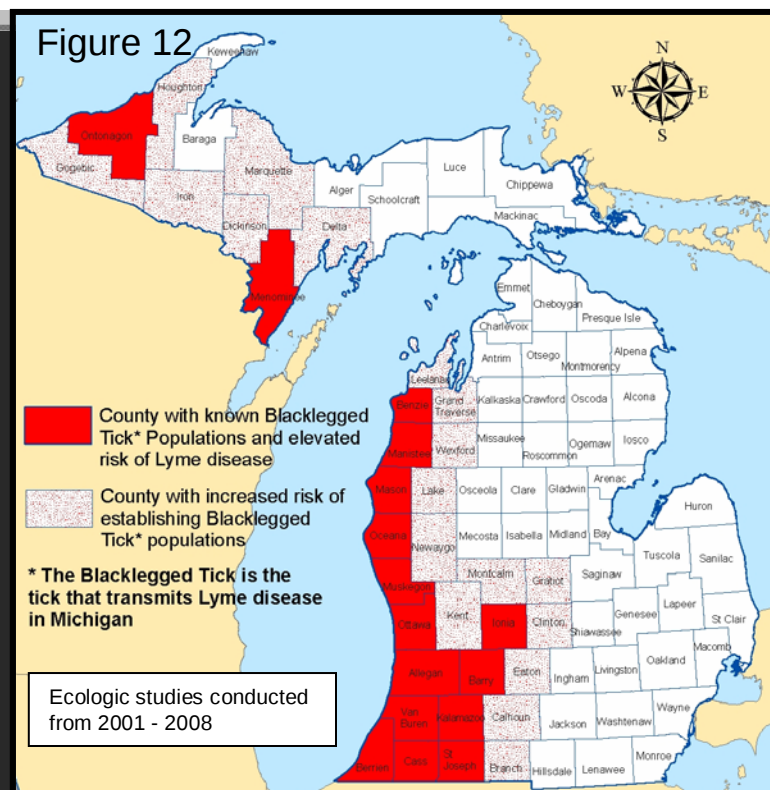
Erythema Migrans with central clearing

Multiple rashes



Vector Tick Geographic Distribution

Increased attention is currently being focused on Western Lower Michigan. This area, which previously showed no evidence of Lyme disease activity, has been identified as an area of concern by researchers studying the Blacklegged Tick. Investigations conducted from 2001-2008 have discovered that tick populations are being established in these areas, and Lyme bacteria has been found in the wildlife and tick populations. The highest populations of the vector tick in the state, however, remain in the western Upper Peninsula. Figure 12 to the right summarizes these results.



2008 Michigan Lyme Disease Surveillance Report

2008: Case Summary

- 92 cases reported
- Age range: 4 — 83 years
- Median age: 44 years
- Males: (43) 47% Females: (49) 53%
- Onset dates of illness:
 - March 16 — December 12
- Exposure:
 - In-State: 58
 - Travel Associated: 33
 - Unknown: 1

* Lyme Disease Cases with Reported Onset - 2008 **Figure 13**

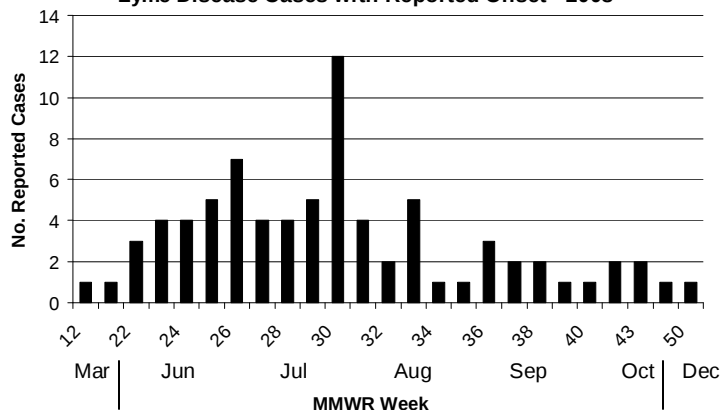


Figure 13: Lyme disease case onset peaks in early to mid-summer which corresponds with peak nymph-stage tick activity in the Midwest



* Peak human case incidence corresponds with peak nymphal stage tick host-seeking behavior.

Distribution of Michigan-Acquired Lyme Disease Cases by Reported County of Exposure- 2008

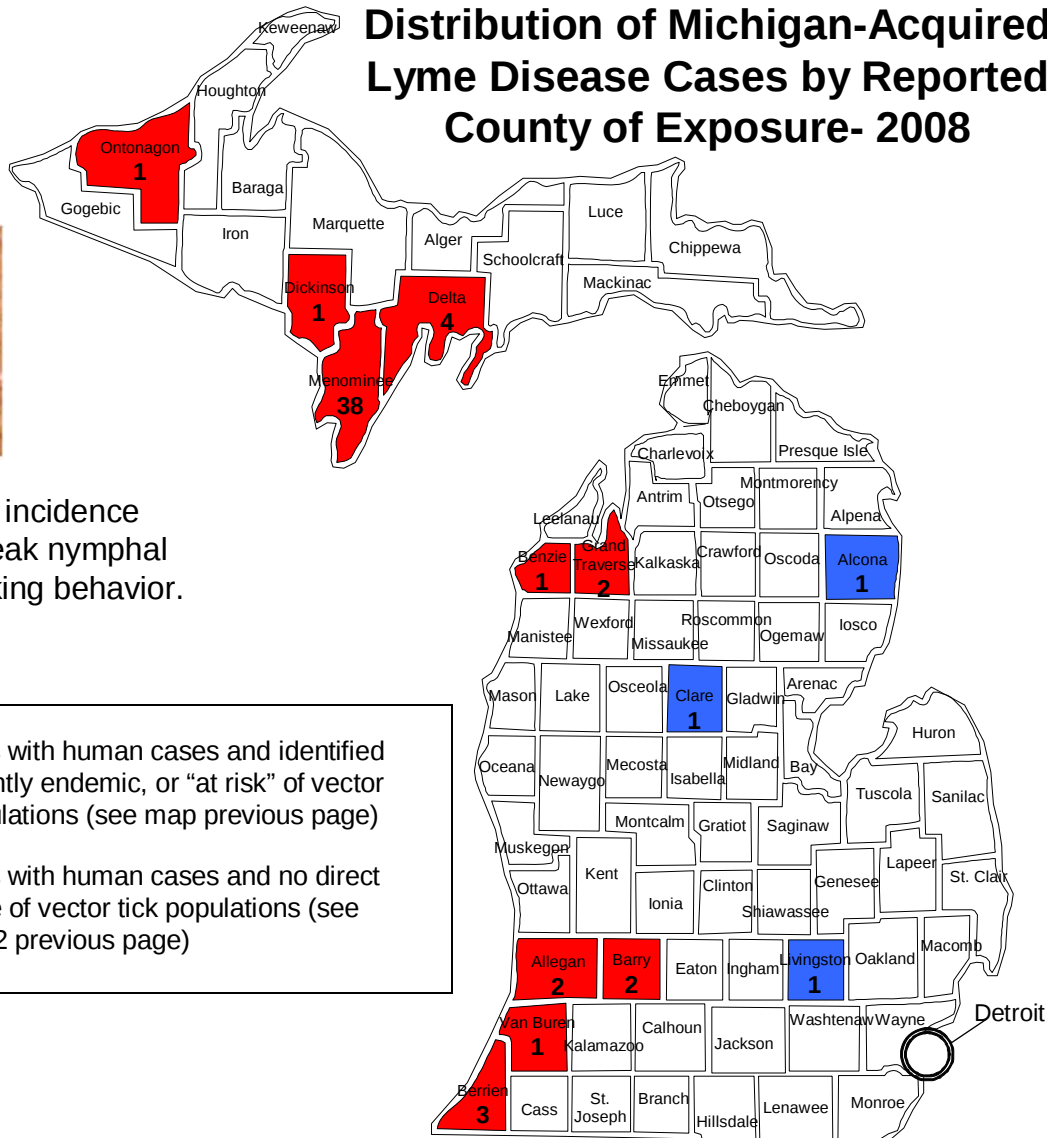


Figure 14

- Counties with human cases and identified as currently endemic, or “at risk” of vector tick populations (see map previous page)
- Counties with human cases and no direct evidence of vector tick populations (see Figure 12 previous page)

Figure 15 **Number of Reported Lyme disease cases by year, Michigan:
2000-2008**

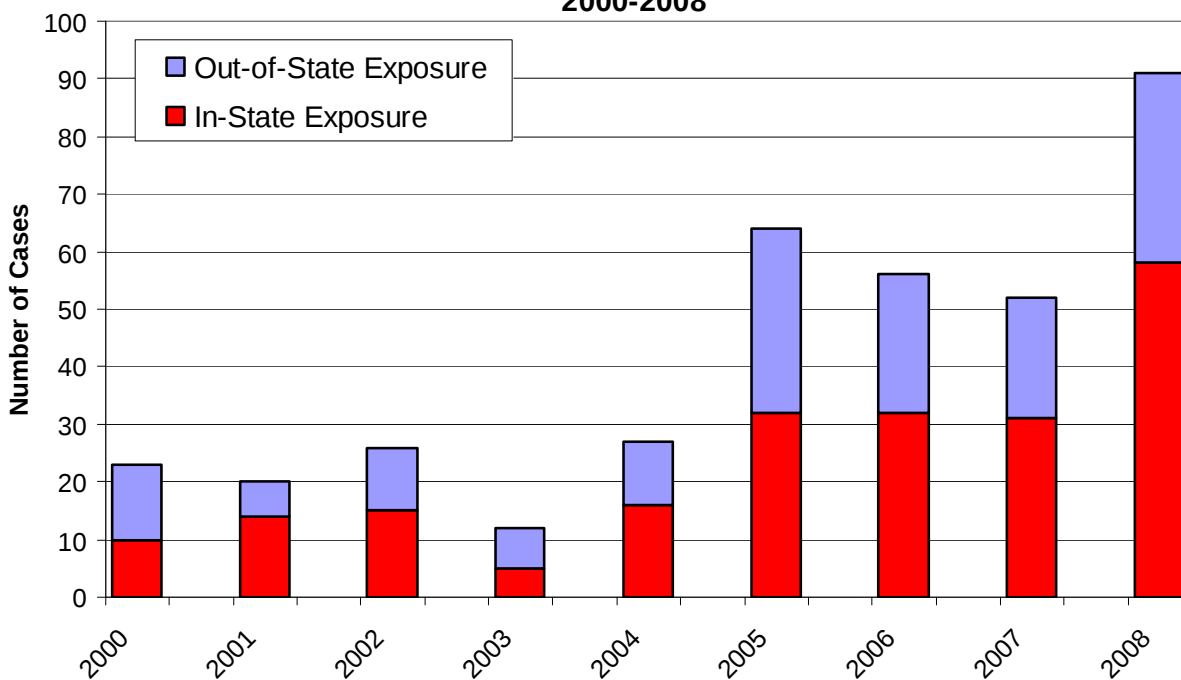


Figure 15: Lyme disease cases, both In-State and Out-of-State exposures, have seen a rise between 2000 and 2008. This may be due to increased awareness and diagnosis locally and nationally, and to the expansion of the vector tick into more habitats in Michigan.

Figure 16 **Lyme Disease Cases by Region of Exposure:
Michigan 2000-2008**

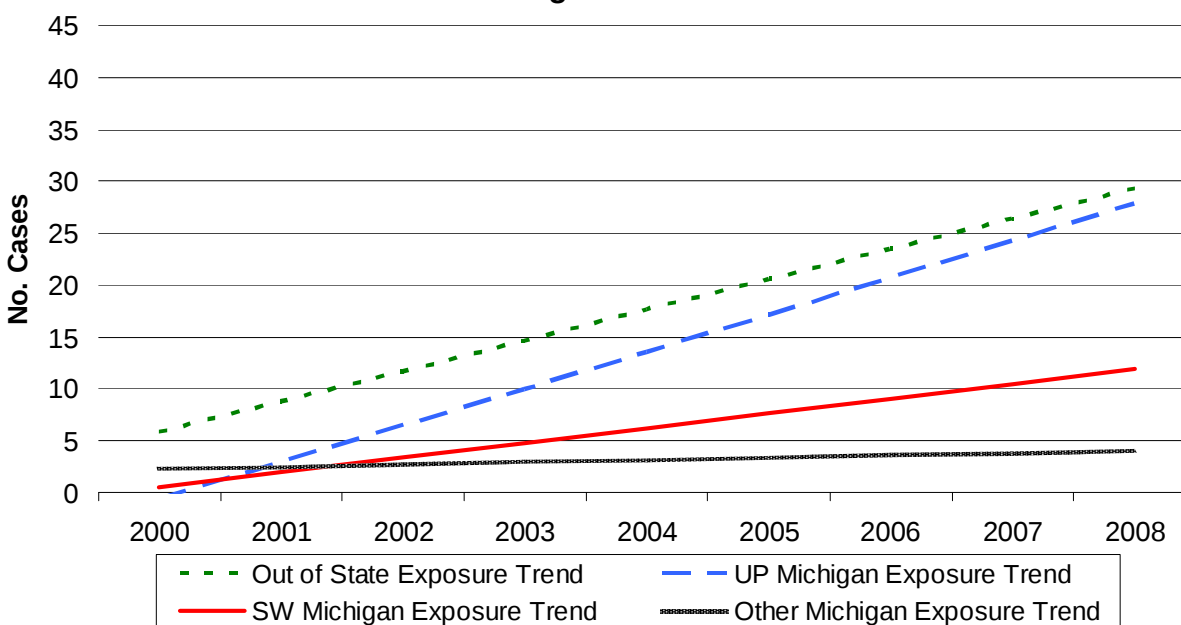


Figure 16: Of the locally acquired Lyme disease cases in Michigan from 2000-2008, there is an increasing trend of reported cases from the Upper Peninsula and SW Michigan, with the remainder of Michigan where tick populations are absent or unknown remaining stable. Out-of-State exposures are also increasing, with many Michigan residents visiting endemic areas in the NE United States and areas of the upper Midwest.

Figure 17 Gender Demographics of Lyme Disease in Michigan:
2000-2008

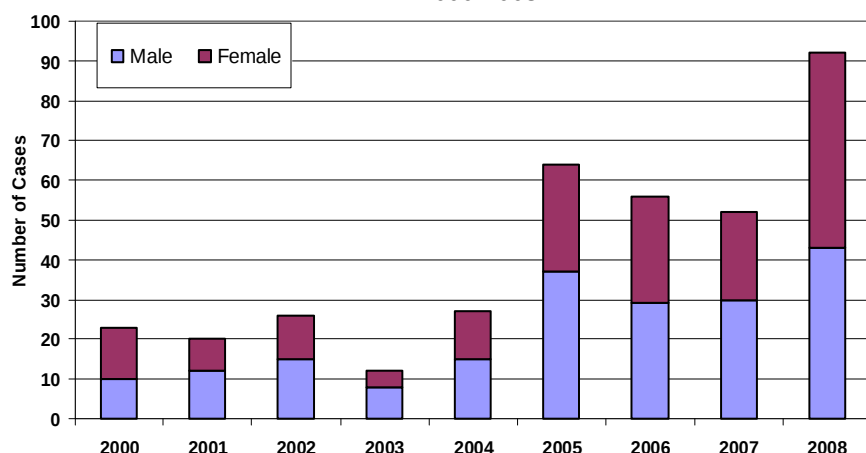
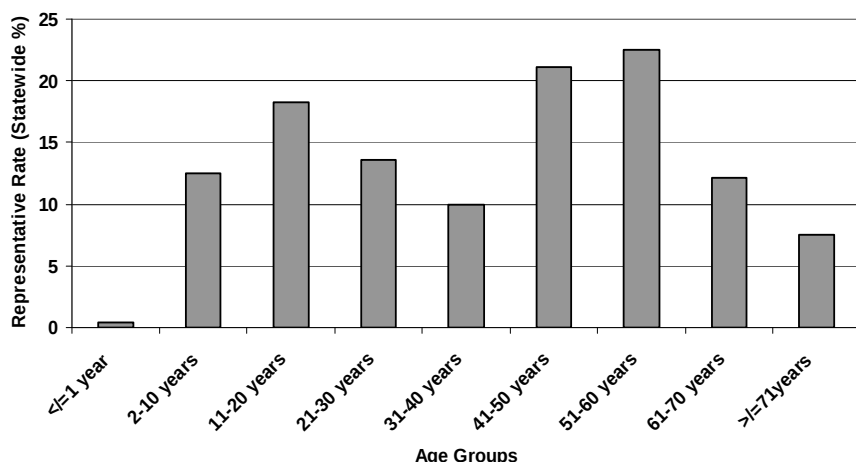


Figure 18 Lyme disease by age group in Michigan: 2000-2008



Figures 17 & 18: Between 2000 and 2008, the incidence of Lyme disease between males and females in Michigan has generally been equally distributed, and Lyme disease can affect people at any age, as can be seen by the broad distribution of illness across age groups. Lyme disease, however, is more common in those who spend more time outdoors in wooded environments for their occupation, or during recreation. DEET products, commonly used for protection against mosquitoes, is also effective against the blacklegged tick. Prompt removal of attached ticks and public awareness of tick habitats and appropriate personal protective measures may significantly reduce the risk of Lyme disease. See the section below for prevention strategies in tick habitats.

Protect Yourself Against Lyme Disease in Spring, Summer, and Fall



If you are going to be in areas that may be tick infested, there are several ways you can protect yourself:

- An infected tick must feed for approximately 48 hours to transmit Lyme disease bacteria to its host. Therefore, prompt removal of ticks can prevent infection.
- Apply insect repellants that contain DEET to clothes and exposed skin, and/or apply Permethrin (which kills ticks on contact) to clothes to reduce the risk of tick attachment. Apply according to label guidelines.
- Several Michigan agencies can identify or test ticks from people or animals, for more information contact your local health department or visit Michigan's Lyme disease website at:

www.michigan.gov/lymedisease

UPDATED! GUIDELINES FOR THE REPORTING OF LYME DISEASE CASES USING THE MICHIGAN DISEASE SURVEILLANCE SYSTEM (MDSS)

INTRODUCTION

Lyme disease has been a reportable condition in Michigan since 1988. Electronic reporting via the Michigan Disease Surveillance System (MDSS) has simplified the process of communicable disease reporting for health care providers and local health departments. The following guidance is provided to aid the investigation and reporting of Lyme disease cases in MDSS. For a complete description of Lyme disease reporting criteria, the updated 2008 Surveillance Case Definition for Lyme disease can be found at http://www.cdc.gov/ncphi/dissn/dndss/casedef/lyme_disease_2008.htm.

REQUIRED INFORMATION AND DOCUMENTATION

The following information is essential for determining case status:

- Date of illness onset
 - Complete clinical presentation
 - Detailed laboratory results
 - **Exposure** to potential tick habitats (wooded, brushy, or grassy areas in a Lyme disease endemic county or state). History of a tick bite is not required, but travel information is important.
- Laboratory confirmation (see below) is recommended for persons with no known exposure.**

If the above information supports **consideration** of Lyme disease, Case Classification ("Case Status") is determined based on CDC case definition as follows:

CONFIRMED:

1. **Physician verified** Erythema Migrans (EM) lesion with a known exposure (as defined above).

OR

2. Physician verified EM **without a known exposure** and with laboratory evidence of infection such as:
 - A positive culture for *B. burgdorferi*OR
 - Two-tier testing including both:
 1. Screening EIA or IFA Lyme antibody positive or equivocal
 2. IgM Western Blot positive

OR

3. A case with at least one late manifestation (see Case Definition) with laboratory evidence of infection:
 - Single tier IgG Western Blot positive

PROBABLE: Any other physician diagnosed case of Lyme disease that has laboratory evidence of infection (see 2 & 3 above).

SUSPECT*:

1. EM with no known exposure **and** no laboratory evidence of infection (see 2 & 3 above).
2. A case with laboratory evidence of infection (see 2 & 3 above) but no clinical information.

*Note – "suspect" cases can not be closed in MDSS. If case does not meet the surveillance case definition for "confirmed" or "probable" classification, close as "not a case".

ENTERING DATA INTO THE MDSS

- Case determination requires that all of the above information be entered into the MDSS using the detailed Lyme Disease Case Report form in the MDSS. If the Case Report Form in the MDSS is not utilized, please fax case reports and laboratory testing results to MDCH at (517) 335-8263.
- Once the necessary information is collected, the local level MDSS user can then determine if the reported case meets the 2008 CDC Lyme Disease Surveillance Case Definition. Based on that assessment, choose the appropriate "Case Status" field: "Confirmed", "Probable", "Suspect", or "Not a Case" (as described above). State epidemiologists will review case investigations based on clinical presentation, exposure history, and laboratory testing and may change 'case status' or 'investigation status' upon that review.
- If a case status is changed by a state epidemiologist, the local health department will be notified when a change is made by notes left in re-activated accounts or by phone or email to request information.

For questions about this document, please call 517-335-8165.

For up-to-date information about Lyme disease in Michigan, please visit the

Michigan Emerging Diseases website at:

WWW.MICHIGAN.GOV/EMERGINGDISEASES

NEW! GUIDELINES FOR COMPLETING ELECTRONICALLY REPORTED "TICK IDENTIFICATION AND TESTING" RESULTS IN MDSS

INTRODUCTION

Laboratory results from MDCH Bureau of Labs are now being automatically entered into MDSS. MDSS generates a case report based on the laboratory results. Occasionally, tick identification and testing results may appear in MDSS. While these reports are often not associated with human illness, this information may be of interest to both local and state health authorities conducting surveillance for tick-borne disease.

WHERE TO FIND RESULTS

- If a tick is determined to be a non-*Ixodes* tick species (such as a *Dermacentor variabilis* (American Dog tick) or an *Amblyomma americanum* (Lone Star tick)), the laboratory results can be found in MDSS under the disease category 'UNUSUAL OUTBREAK OR OCCURRENCE'. The laboratory will identify the species of such ticks, but no IFA testing will be performed since only *Ixodes scapularis* ticks are of concern in the transmission of Lyme disease. Therefore, no IFA results will be listed in the laboratory results section of the report.
 - o To search for MDCH laboratory results within the category 'Unusual Outbreak or Occurrence,' use a NEW SEARCH in MDSS. Choose the 'Unusual Outbreak or Occurrence' category, and then use the ADVANCED tab at the bottom of the screen. Under laboratory name in the ADVANCED tab, type *MDCH* (asterisks included), and conduct the search. This will not isolate tick-testing results, but will limit the search to labs reported from MDCH within your jurisdiction, within a given timeframe.
 - o The local level user can then COMPLETE the 'investigation status' and determine the 'case status' to be NOT A CASE. No further investigation is necessary.

Michigan's Five Most Common Ticks

Ticks are significant vectors (carriers) of pathogens that cause human and animal disease. In Michigan, tick-borne diseases are rare, but they do occur and can be serious if not properly diagnosed and treated.



American Dog tick *Dermacentor variabilis*

The American Dog tick is by far the most common tick found in Michigan. It is active from early May-November. It will readily bite humans and our companion animals. This species is the vector of Rocky Mountain spotted fever and tularemia, and is easily distinguished by its ornate scutum.



Lone Star tick *Amblyomma americanum*

Known by its distinctive "Lone Star" marking, this tick is becoming more prevalent in Michigan. It will readily bite people and our companion animals, and is the vector of monocytic ehrlichiosis and tularemia. This tick is common in wooded areas with populations of white-tailed deer.



Black-legged tick *Ixodes scapularis*

Emerging as a serious public health concern in Michigan, the Black-legged tick is the vector of Lyme disease, granulocytic anaplasmosis, and babesiosis. This tick readily quests for hosts in the low vegetation of forests with abundant small mammals and white-tailed deer; accumulating along human and game trails.

Woodchuck tick *Ixodes cookei*

Often confused with the Black-legged tick, *Ixodes cookei* is common in Michigan and will readily bite dogs and humans. People and pets will often come in contact near the dens of animals (skunks, woodchucks) in wooded environments. This species is the vector of Powassan encephalitis.



Brown Dog tick *Rhipicephalus sanaguineus*

Also known as the Kennel tick, this species is unique in its ability to survive and breed in indoor environments. It is the vector of Rocky Mountain spotted fever, canine babesiosis and canine ehrlichiosis. Hygienic practices in shelters/kennels can prevent infestations.



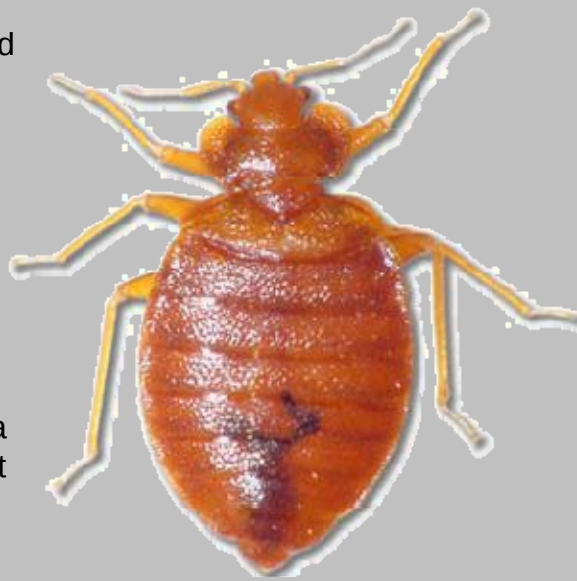
All photos © Kent Loeffler, Cornell University Extension

Don't Let the Bed Bugs Bite!!

Michigan creates "Bed Bug Working Group"

State and local public health authorities have seen increasing calls and public concern over a once forgotten pest, bed bugs (*Cimex lectularius*). Recently bed bugs have made a resurgence in the U.S., infesting hotels, apartment complexes, and homes nationally. Although not known to transmit any human disease, they leave a trail of potentially itchy or painful bite reactions, and costly extermination bills in their wake. International travel and tighter environmental regulations on pesticides are thought to be contributors to the recent resurgence in the U.S. and many other countries.

The Michigan Department of Community Health recently established a Bed Bug Working Group including multiple state and local government agencies, public universities and stakeholder groups. The aims of the group are to provide Michigan's citizens with accurate and useful information, training for public health inspectors, and recommendations to prevent and control infestations before they get "out-of-control".



Bed Bug Resources

Resources are posted to the State of Michigan Emerging Diseases website as they become available.

www.michigan.gov/emergingdiseases

Michigan Department of Community Health
MDCH

Fact Sheet Bed Bugs

Yes, bed bugs are real, and not the product of urban myth or fables. Recently bed bugs have made a resurgence in the U.S., infesting hotels, apartment complexes, and homes nationally. Although not known to transmit any human disease, they leave a trail of potentially itchy or painful bite reactions, and costly extermination bills in their wake. International travel and tighter environmental regulations on pesticides are thought to be contributors to the recent comeback in the U.S. and many other countries. This fact sheet is designed to describe what bed bugs are, and how citizens can deal with infestations and protect themselves during travel.

What are bed bugs?
Bed bugs are insects, more specifically "true bugs". True bugs have piercing mouthparts that in most species are used for feeding on plants. However, some species of bugs will feed on animal tissues. Bed bugs have mouthparts, which are adapted to feed almost painlessly on the blood of people. Human-associated bed bugs found in the U.S., *Cimex lectularius*, have a flat, oval-shaped body with no wings, and are 4-7mm long. Their color is shiny reddish-brown but after a blood meal they become swollen and dark brown in color (see picture below). There are three stages in the bed bug's life cycle: egg, nymph and adult (see picture below). The eggs are white and about 1mm long. The nymphs look like adults but are smaller. Complete development from egg to adult takes from four weeks to several months, depending on temperature and the availability of food. Both male and female bed bugs feed on the blood of sleeping persons at night. In the absence of humans they can feed on mice, rats, chickens and other animals. Feeding takes about 10-15 minutes for adults, less for nymphs, and is repeated about every three days. Bed bug nymphs can survive for considerable periods (months) without feeding, depending on environmental conditions.

Life cycle of the human bed bug, *Cimex lectularius*.
The stages include egg, nymph (5 instars), and adult.

When using chemicals to control bedbugs:

- Do NOT apply any pesticide to mattresses or to surfaces that would be in direct human contact, except when the pesticide label specifically states that the product can be applied in that manner. Pesticides can be harmful to people and pets. READ and UNDERSTAND the label.
- Carefully read the label before applying any pesticide. Apply the product only if you fully understand the instructions and if you have the appropriate training/certification and equipment.
- Insecticide formulations used to treat bedbug infestations consist mainly of:
 - Insecticide dusts that injure the insect's outer waxy coat and cause the bugs to dry out quickly.
 - Contact insecticides that kill the bugs shortly after they come into direct contact with the product or residue.
 - Insect growth regulators (IGRs) that affect the insect's development and reproduction.

Pest control operators may also consider and prescribe a variety of other methods to manage bedbugs. See MSU Pesticide Safety Education Bulletin E-2760, "Choosing a Pest Control Company."

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Michigan State University Extension

Community IPM Education Series
MSU Pesticide Safety Education Program
Extension Bulletin E-2971

#7: Questions and Answers about Bedbugs

Questions and Answers About Bedbugs

Guidelines to help you solve bedbug problems in your home

#2: Choosing a Pest Control Company

Choosing a Pest Control Company

Guidelines on making informed decisions to help solve pest problems in your home

Community IPM Education Series
MSU Pesticide Safety Education Program
Extension Bulletin E-2760