A Guide to Fieldwork Safety for MSU Entomologists

Version 2, Spring 2023

This document was created by Jacquelyn Perkins with input from many others in the department. The bias and discrimination protocol was written by the EROF committee with input from faculty leaders and the DEI Committee in the College of Agriculture and Natural Resources.

This guide can be shared with new employees before fieldwork starts.

A 23 minute video that reviews this document is available on the department website at: https://tinyurl.com/5cf74dcx

INTRODUCTION

Fieldwork is a necessary part of many entomological research programs. This guide is intended to help you plan and prepare for health and safety issues you might encounter while conducting work in field settings. The following safety guidelines are for any type of fieldwork and can be used to help develop your own personal safety plan for each field activity. Since each research project is unique, the specific hazards of each project need to be addressed in a specific safety plan. This is not an exhaustive list of hazards, so some additional research may be needed to determine the specific hazards of each study location or research activity. For more specific information on fieldwork hazards and precautions, talk to your supervisor, view the resources at the end of this document, or contact Environmental Health and Safety at MSU (ehs.msu.edu).

This information is also summarized in a training video posted at: https://tinyurl.com/5cf74dcx

TRAVEL AUTHORIZATION AND REQUIRED TRAININGS

1) Every employee of the Department of Entomology that plans to travel in a university vehicle to field sites is required to have an Employee Driver Certification Form approved by the department. This certification form needs to be renewed every calendar year.

2) Every entomology employee is required to undergo site-specific training for any lab or other research space they will work in. This includes the required online trainings pertinent to an individual's research that can be accessed at https://ora.msu.edu/train/ (includes chemical hygiene, hazardous waste, greenhouse, power tools, etc.)

3) Anyone who works on farms, in greenhouses, at the Entomology Farm, or in other areas where pesticides are applied is required to take the federal Worker Protection Standard (WPS) training before starting work in those areas. This training must be provided by a certified pesticide applicator and needs to be renewed annually. Site-specific training for every research farm, greenhouse, etc. that you may work at is also required under the WPS. The manager of each location (farmer, greenhouse manager, farm manager, etc.) will be able to provide that training.

PREPARING FOR FIELDWORK

Research in the field can often be unpredictable. Making sure you have the right supplies with you every day is crucial for maintaining safe field research practices. Follow these recommendations to make your field days as smooth as possible:

1) Let your supervisor know where you are going and when you plan to return to campus. A quick text message can be used to let them know you returned safely.

2) Make sure to check with land owners, farmers, or other interested parties prior to going on to private land. This is especially important because pesticide applications may be planned in farms, and because since neighbors may call if an unfamiliar vehicle/pole are

visiting a site.

3) If going to a field site at odd hours, such as night collecting, you may want to inform local authorities about the dates and times you plan to be in the field. If there are certain officers that commonly patrol these areas, you can ask for their names and badge numbers to refer to in the event you are approached by police. This can help avoid unnecessary interactions with police and help keep you safe.

4) Plan ahead for bathroom breaks. Identify easy, accessible places to stop at regular intervals during the day so that everyone has a chance to use the bathroom when needed. Don't be afraid to ask to stop if you need a bathroom break.

5) Bring LOTS of water, particularly on warm days. Many field sites are in remote locations and it can be hard to find places to refill water bottles. Do not drink water from irrigation ponds, or rivers/streams/lakes, as it may be unsafe for drinking. Placing a water bottle that's 80% full into the freezer overnight can provide a cold drink through the day and could also serve as a cool pack for your lunch. Also consider purchasing a larger cooler for refills that can be placed in the back of the truck.

6) Bring a lunch and snacks since it is not always possible to get to a restaurant or store for food during the day.

7) If you need allergy or other specific medicines, bring those with you. If you are comfortable, disclose medical needs to your supervisor (peanut allergy, bee sting sensitivity, etc). If you are allergic to bees, discuss getting an epi-pen prescription from a doctor prior to fieldwork, and carry that with you. Also alert your co-workers so they know where it is and how to administer it. Review this video for detailed instructions on how to use an epi-pen: https://youtu.be/yPOMZ75tfSE

8) Have your phone charged and bring a spare charger with you if needed in case you need to make an emergency call. Share your cellphone number with work colleagues. Provide a printed list of phone numbers to call in case of emergency, in the event someone's phone runs out of power.

9) Have maps to all field locations, GPS, etc. Whatever you need to be sure you are navigating to the right place.

10) Wear appropriate field attire:
    a. Long pants and closed toed shoes are required by law on any farm where pesticides are used.
        a. Quick dry, light hiking pants are the best for summer.
        b. Hiking boots with tread and ankle support are also recommended.
    b. Recommended to bring a hat and sunglasses to protect your eyes, face, and neck from harmful rays.
    c. Recommended to wear sunscreen and reapply if you are in direct sunlight for an extended period of time.

d. Recommended to wear layers in case of unpredictable weather, especially rain gear. Weather in Michigan is typically unpredictable but a check of www.weatherunderground.org or a similar site should give you a view of the likely conditions during your fieldwork and can alert you to potentially risky weather.

TRAVEL TO FIELD SITES

Fieldwork often takes us to different areas around the state, sometimes to remote field sites that are many hours' drive from campus. It is crucial to know where you are going (have maps, GPS, etc.), to notify the land owners before each visit, and to have all necessary safety items in your work vehicle before leaving campus.

1) All university vehicles should have a vehicle safety kit which provides the following items:
    a. List of medical facilities near common field work locations
    b. Contact information for lab members and PI
    c. Water jug (one gallon for each person)
    d. Eye rinse
    e. Paper towels
    f. Hand soap
    g. Hand sanitizer
    h. Baby wipes
    i. Tyvek coveralls (at least one for each person)
    j. First aid kit
    k. Poison Ivy soap
    l. Benadryl
    m. Sunscreen
    n. Bug spray
    o. Gatorade, Pedialyte, or liquid IV
    p. Box of gloves (multiple sizes)
    q. Change of clothes in case of pesticide contamination (sweatpants and t-shirts)

It is also a good idea for each person to have identifying MSU logos on the vehicle, and on your clothing that identifies you as a MSU employee. This can include MSU hats, T-shirts, or reflective work vests. It is also good to place magnetic signs with your lab logo onto lab vehicles. Talk to your supervisor about purchasing these for your team to ensure you are identifiable as a university employee. Magnetic signs can be made at Shutterfly and many other online suppliers. High visibility vests, as well as MSU hats, etc. are available at MSU University Stores on Service Road (also available online through www.marketplace.msu.edu)

If you work with directly with stinging insects, such as bees or wasps, it is recommended that you get a set of epi-pens to have in each truck during field days. Even if you don't have anyone in your lab with a known allergy, it is possible that people are unaware of all possible insect allergies or may develop severe allergic reactions from repeated stings. The university physician is able to prescribe these to relevant labs.

a. Reach out to the University Physician to obtain epi-pens for your lab (one 2-pack per research vehicle). Email: ht.uphys@msu.edu
b. Ensure that all members of the lab are familiar with proper epi-pen use. This video provides good training: https://youtu.be/yPOMZ75tfSE
c. Epi-pens need to be stored at room temperature and should not be exposed to extreme heat or cold for extended periods of time. For this reason, make sure not to leave epi-pens in hot research vehicles during the summer, they should be transported to the field in insulated coolers and returned to the lab at the end of each day.

2) Accident kits are provided in each university vehicle with instruction on what to do if you are in an accident and the relevant paperwork. These documents are required in every vehicle and should be located in the glove box. Familiarize yourself with where the documentation is held so it can be easily found when needed.

3) While in university vehicles you are representing MSU. The vehicles are clearly marked with MSU stickers and decals and each vehicle is assigned a unique identifying number. The public can call and report anyone driving recklessly and identify the vehicle using this number. Please drive responsibly and act appropriately on the road.
   a. Obey all traffic laws
   b. Wear your seatbelt
   c. Don't speed or drive recklessly
   d. Don't engage in road rage
   e. Don't text and drive

4) You must always have your driver's license on you when driving in a university vehicle. It is also advised to always carry your MSU ID card while in a university vehicle.

5) No smoking in MSU vehicles.

6) Keep vehicles clean – they belong to MSU they are not your personal vehicle.

7) Avoid driving in areas where you might get the vehicle stuck, such as mud, loose sand, or steep slopes. If available, remember to use 4-wheel drive when needed.

8) For long journeys, it is best to be prepared with coffee, snacks, water etc. to maintain alertness during your trip. If you feel tired, stop and take a rest.

9) Talk with your supervisor about where you're traveling and take extra safety precautions as needed. Field sites where discrimination and bias has occurred should be recorded by lab groups and additional safety measures should be in place for these sites. See 'Bias and discrimination in the field' section for more details.

If you are stopped by the police, it is recommended to follow these safety tips.

1) Slow down and pull your vehicle over as soon as it is safe.

2) Stay inside the vehicle with your hands on the steering wheel.

3) The officer will ask to see your driver's license, proof of insurance and vehicle registration. You must produce these items for inspection. Inform the officer when retrieving documentation before moving your hands off of the steering wheel. Don't search for your license or registration until you are asked to provide it.

4) Don't refuse to sign a ticket. You can be arrested for it.

5) Don't attempt to bribe or physically resist the police.

6) Follow the verbal directions of the officer and answer truthfully. The side of the road is not the place to debate with the officer. If you feel that you have been wronged, you will have the opportunity to present your side in court.

7) If you feel threatened by a police officer, you are allowed to record the interaction on your phone for safety. You are also allowed to ask for their name and badge number.

POTENTIAL ENVIRONMENTAL HAZARDS

Follow these recommended tips to help minimize potential hazards in the field.

1) **Ticks and mosquitos**
    a. Wear insect repellent and/or clothing designed to reduce insect bites
    b. Tuck pants into boots and socks to reduce tick issues
    c. Consider treating your field clothes and boots with permethrin for warding off ticks or purchase pre-treated clothing.
    d. Thoroughly check for ticks at the end of every field day
    e. When you get home, take a shower and do a thorough full body tick check
    f. Download the "Tick App" from https://thetickapp.org/ which provides information on ways to prevent tick exposure, shows how to identify different kinds of ticks and the diseases they transmit, and allows you to contribute to citizen science research regarding ticks in Michigan.
    g. See additional resources for identifying ticks at the end of this document.

2) **Poison ivy, oak, and sumac**
    a. Practice identifying poisonous plants to better avoid accidental contact with them.
    b. If very sensitive or if you know you will be exposed, use pre-exposure lotion.
    c. If you think you came in contact with poison ivy, rub Technu (or other soaps that will dissolve toxic oils) on any exposed areas as soon as you can, and then wash off.
    d. Wash clothes and skin with soap and water.

e. See additional resources for identifying poisonous plants at the end of this document.

3) Heat exhaustion and dehydration

Heat exhaustion is a significant risk on long hot field days, and should be actively self-checked as well as being something that field crew leaders should be vigilant for. People with slurred speech, dizziness, nausea, fast pulse, or hot skin may be experiencing heatstroke without realizing. Get them into the shade, or an air-conditioned vehicle, ensure they drink water or a Gatorade-type of drink. To avoid heat stroke, follow these steps.

a. Drink plenty of water - at least 2 quarts a day (more if strenuous activity or in hot weather).
b. Take frequent breaks as needed.
c. Know the symptoms of heat exhaustion: heavy sweating, cold/pale/clammy skin, nausea or vomiting, muscle cramps, tiredness or weakness, dizziness, headache, and fainting. If you or a co-worker are experiencing heat exhaustion:
    i. Move to a cool place
    ii. Loosen clothing
    iii. Put cool, wet cloths on body
    iv. Sip water
    v. Seek medical attention if conditions persist
d. If you go to an urgent care or hospital, call the MSU Business office at *** to report a workman's comp case. Also mention this at the medical facility so you are covered by MSU insurance.

4) Pesticide Exposure

a. Make sure to contact growers before entering a field where pesticides may have been applied. They will tell you if the Re-Entry Interval (REI) has passed and if the field is safe to enter, or what personal protection equipment (PPE) must be worn.
b. When visiting private farms or any MSU facility, check the central notification system for any pesticide application plans and REIs before entering a field. If you are exposed to a pesticide at a research station, you or a co-worker should find the medical safety data sheet (MSDS) for the pesticide you were exposed to and provide it to medical personnel so they can properly care for you.
c. Know the symptoms of pesticide poisoning: excessive sweating, salivation, narrowing of pupils, nausea/vomiting/diarrhea, muscle twitching/hand tremors, convulsions, unconsciousness, allergic reactions, blurred vision.
    i. Seek medical attention if experiencing symptoms of pesticide exposure
d. Make sure there is at least 1 gallon of water in the truck for each person to rinse off in the event of pesticide exposure. Vehicles should also have eye rinse solutions and a change of clothes available.

5) Extreme weather

a. Michigan summer weather can include tornadoes and intense rainfall, and in the winter there can be very cold and icy conditions.

b. Plan out your day by first looking at the weather forecast and check during fieldwork – cancel or adjust plans as needed.
c. Extreme weather alerts can be sent to your phone – sign up for these online.

6) Hunting season

a. Know the important hunting dates for your research area
    i. Michigan deer archery season is Oct 1- Nov 14 and Dec 1-Jan 1
    ii. Michigan deer regular firearm season is Nov 15-30
    iii. Check DNR website waterfowl, small game, bird, etc.
b. Wear appropriately colored safety clothing (i.e. "hunter orange")
c. Contact land owners and get permission before going to the field
d. Avoid animal-like behavior (ex: hiding in thickets)
e. Avoid field activities during peak hunting times (dawn and dusk)

7) Bees, wasps, stinging insects

a. Carefully look for stinging insects before placing your hands, feet or body in areas where they may live or hide (wood piles, hollow logs, crevices, etc.).
b. Bring medication if you have an allergy
c. Keep scented foods, drinks and meats covered
d. Wear shoes outside
e. Avoid wearing black, bright colors, flower prints and perfume
f. Move slowly or stand still (don't swat at insects)

8) Snakes

There is only one species of venomous snake in Michigan, the Eastern Massasauga rattlesnake. They are found in shallow wetlands and the adjacent uplands. They are shy and quite rare, but they will bite if threatened. See photo at the end of this document for identification keys. The best approach is to avoid close interaction with this species.

a. Walk in open areas
b. Wear heavy boots
c. Use a stick to disturb the brush in front of you
d. Do not pick up, disturb, or corner a snake
e. Back away from a snake
f. Seek immediate medical attention if bitten

SAFE FIELDWORK STRATEGIES FOR ALL

We acknowledge that some members of our department are at greater risk of prejudice and violence in the field than others. As stated by Demery and Pipkin (2021): "At-risk individuals include minority identities of the following: race/ethnicity, sexual orientation, disability, gender identity and/or religion. When individuals from these backgrounds enter unfamiliar communities in the course of fieldwork, they may be placed in an uncomfortable and potentially unsafe 'othered' position, and prejudice may manifest against them". To proactively address this, supervisors and their employees should discuss how best to minimize these concerns through an open discussion about field safety, and with supervisors being aware of the potential for greater risk for their trainees than they may experience.

The following recommendations are adapted from: Demery, A.J.C. and Pipkin, M.A., 2021. Safe fieldwork strategies for at-risk individuals, their supervisors and institutions. Nature Ecology & Evolution, 5, 5-9.

What research teams should do to mitigate prejudice in the field:

1) Review and agree upon fieldwork and safety plans before any fieldwork begins.

2) At established field sites, introduce researchers (via e-mail or in-person) to the managers and crew of those locations, if they exist. If there are multiple managers, researchers should be introduced to each manager to minimize any miscommunication that could lead to increased risk.

3) Take detailed record of incidents that have occurred at certain field sites. This should include the date, time, location, and specific details on the incident that occurred and the people who were a part of it. Supervisors should also record what steps were taken following a given encounter to avoid repeated incidents in the future. Transparency with team members on previous incidents before entering a field is essential for their safety.

4) Show new researchers established field locations, teach them about the specific concerns of that field location, and inform them of the resources in accordance with established safety plans. The resources should have contact information about field site personnel relevant to research and safety (for example, contact information of the local police department).

5) Ensure field course locations and housing are appropriate, safe, and equitable for all identities. Lab leaders should solicit regular, anonymized feedback from field researchers to determine the climate and safety of field sites and accommodations.

6) Provide materials to clearly identify researchers and their purpose (for example, signs for vehicles and field sites, safety vests, MSU hats, MSU ID and ID tag to clip onto their clothing and so on). These items should be provided for researchers so that their use is easily implemented.

7) Supply an official letter of support for researchers doing fieldwork with contact information. This provides additional credibility to the researcher, if and when they are approached and challenged.

8) Lab leaders should self-educate on the experience of your team member's identity, and the corresponding risk that they may encounter in the field. Furthermore, self-educate on the politics, demographics and culture of the areas surrounding established field site(s), in order to be fully aware of potential risks. If you have a field site that has a history of issues, ensure that team members will not be alone or consider discontinuing research at a given field site.

9) Create a time and space to talk to research team members specifically about fieldwork safety concerns in advance of the field season, and touch base with them throughout the

season to address new concerns. As a reminder, this is an uncomfortable reality and merits the need to establish a space and time for both parties (researcher and supervisor) to be ready and willing to engage in this important discussion.

What can field researchers do to mitigate potential risks that arise from prejudice:

1) Talk with colleagues and supervisors about the risks, preparations to minimize risk, and reporting mechanisms. Be aware that the conversation will likely be difficult and will require mental and emotional readiness by both parties. If a supervisor is dismissive of this conversation, individuals should be aware that they can and should reach out to additional mentors, institutional or industry advocates (for example, an ombudsman, Equal Employment Opportunity officer, Diversity and Inclusion administrators, Student Disability Services or other trusted professionals to have this conversation).

2) Contact others (especially those who share an at-risk identity) that have previously used a field site at a location where there is a history of risk. It is recommended that researchers document all known cases of risk at that location.

3) Take advantage of training opportunities to increase field safety and promote awareness (for example, self-defense courses, first aid, safety aids and cultural history courses about the location of the field site).

4) Know who manages the field site(s) and inform the field managers when and where you will be at those locations.

5) Introduce yourself to the neighbors surrounding the field property, or leave a short note informing neighbors about research being conducted at nearby locations and who will be conducting the research. It is advisable to also include contact information, preferably information that clearly demonstrates affiliation with the research institution to provide additional credibility.

6) Engage in fieldwork with another person, when possible. When this is not possible, have a point of contact (preferably the supervisor) who is aware of your whereabouts and expected schedule on a given day. A written communication plan that gives notice of field plans is another way to maintain communication with a point of contact.

7) Always carry credentials in case someone challenges why you are at the field site. These include photo identification (driver's license, passports, institution identification) and relevant permits. Any additional form of identification that clearly demonstrates affiliation with the research institution can also be helpful (that is, university apparel, institution bumper stickers or car magnets, and so on).

If at any time you feel unsafe, you should contact your supervisor to discuss ways to modify the project. While supervisors may work closely with researchers, they often do so outside of the field site, and therefore may not know of the risks and dangers encountered therein. It may be

necessary for at-risk individuals to advocate for themselves or find allies to approach that can keep supervisors accountable for prioritizing their safety.

BIAS AND DISCRIMINATION IN THE FIELD

This scenario-based protocol serves as a guide and resource for researchers and their supervisors engaging in field research. The purpose of this protocol is to help supervisors and researchers prepare for potential bias, harassment, and discrimination encountered in the field.

SCENARIO 1: BIAS/MICRO-AGGRESSIONS

Scenario: Tina is working as a research assistant in a botany lab for the summer. One day while she is measuring plants at one of her field sites *alone*, she is confronted by a couple who was taking a walk through her field site. The couple decides to start asking questions about who she is, what she's doing, and if she's supposed to be there. Tina feels uncomfortable- what are the steps she should take to safely address the situation?

Steps to take *during* the confrontation:

1. Let them know you are a MSU employee and show documentation if necessary
2. If you are on MSU property, reference signage and explain that it is private property
3. If they continue harassing you, record the perpetrators using your cell phone

Steps to take *after* the confrontation:

1. Contact your supervisor and/or lab PI to let them know what happened
2. Make a plan to avoid future situations (i.e., don't return to that site, have someone go with you to that site from then on)
3. If the researcher is comfortable, notify the university of the incident (see 'additional resources' below)

SCENARIO 2: PRESENCE CHALLENGED IN THE FIELD

Scenario: Marcus is collecting codling moth traps in an apple orchard. While returning to their vehicle to get replacement traps, a car pulls off the road next to them. A person gets out of the vehicle and accuses Marcus of trying to steal apples. The person says they are friends with the person who owns the farm and Marcus must wait with them until they hear back from the farm owner. The person also calls the police, telling them they caught a thief. Marcus feels anxious - what are the steps they should take to safely address the situation?

Steps to take *during* the confrontation:

1. Try to remain calm, remember you have done nothing wrong.
2. Call your immediate supervisor while you wait.
3. Let them know you are a MSU employee and show documentation if necessary (MSU ID, WPS Certification letter, Proof of Employment letter from your supervisor)
4. Tell them the name of the person who knows you are on the farm and try to contact them yourself.
5. Remain on the phone with someone while you wait (supervisor, coworker, family member etc. Even conference call with multiple people if necessary)

6. If the accuser claims you are doing violent or harmful actions, video record what is happening. This will provide footage of what truly occurred.
7. When the police arrive, show them the same documentation from step 3, and have your supervisor on speaker phone while they talk with you.

Steps to take *after* the confrontation:

1. Notify the farm manager of what happened (you or your supervisor). Ask them to put out more signage that says MSU Research next to the orchard (paid for by your lab/department).
2. Notify department leaders of the situation or have your supervisor do so.
3. Request another person to accompany you in the field, or not return to that field at all. Ask your supervisor what your options are.
4. If you feel uncomfortable with the resolution you and your supervisor came to, immediately contact the Department chair Hannah Barrack or DEI committee members.

ADDITIONAL RESOURCES
There are many resources available that may provide more in-depth information regarding your research environment. Please use the references in this section for further information on many of the topics discussed**.**

MSU Environmental Health and Safety
Website - ehs.msu.edu
Phone - 517-355-0153
Email – ehs@msu.edu

MSU Public Safety and Police Services
Website – police.msu.edu
Phone - (517) 355-2221
Email – info@police.msu.edu

MSU Office of the University Ombudsperson
Website- www.ombud.msu.edu
Phone - (517) 353-8830
E-mail- ombud@msu.edu
Ombudsperson problem/concern form:
https://ombud.msu.edu/schedule-appointment-contact/problem-concern-form

Office of Equity and Inclusion – University reporting
Website – civilrights.msu.edu
Phone – (517) 353-3922
Email – oie@msu.edu

CANR Culturally Inclusive College (CIC) Sharing Form
https://www.canr.msu.edu/diversity/culturally-inclusive-sharing/

Where to report criminal and ethical misconduct
https://www.canr.msu.edu/ent/commitment-to-diversity-equity-and-inclusion/reporting-resources

MSU Resource Center for Persons with Disabilities
Website – https://www.rcpd.msu.edu

Michigan DNR:
Hunting season calendar – https://www.michigan.gov/dnr/0,4570,7-350-79119_79147_82106---,00.html

CDC:
Travel - http://wwwn.cdc.gov/travel/default.aspx
Waterborne diseases – http://www.cdc.gov/healthywater/

National Weather Service:
Extreme weather safety – http://weather.gov/safety.html

US Forest Service:
Outdoor activity safety - http://www.fs.fed.us/safety/outdoor/

American Lyme Disease Foundation
Lyme disease info - http://www.aldf.com

Safe fieldwork strategies for at-risk individuals, their supervisors and institutions:
https://www.nature.com/articles/s41559-020-01328-5

MDHHS
Michigan Department of Health & Human Services

Michigan's Five Most Common Ticks

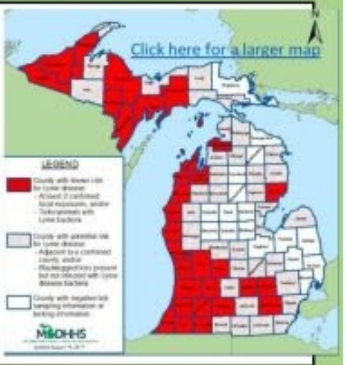
Ticks are significant carriers of pathogens that cause human and animal disease. Listed here is a ranked order of the ticks most likely to bite humans in Michigan.

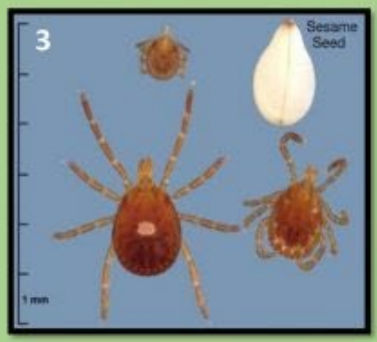
1. American dog tick (*Dermacentor variabilis*)

Distribution: Widespread throughout Michigan forests and grassy areas
Key Facts: These ticks are active from early May-November, and will bite both humans and companion animals.
Diseases: Diseases associated with the American dog tick are rare in Michigan, but may include Rocky Mountain spotted fever and tularemia.

2. Blacklegged tick (*Ixodes scapularis*)

Distribution: Emerging in Michigan, see map at right
Key Facts: Found on low forest vegetation, often along human and animal trails.
Diseases: Lyme disease is the most common tick-borne disease in Michigan. Other rare diseases include: anaplasmosis, babesiosis, deer-tick virus, and ehrlichiosis.





3. Lone star tick (*Amblyomma americanum*)

Distribution: Occasionally found in wooded and grassy areas across the state
Key Facts: An aggressive biter of humans and companion animals, adult females have distinctive "Lone Star" mark
Diseases: Ehrlichiosis, rocky mountain spotted fever, tularemia

4. Woodchuck tick (*Ixodes cookei*)

Distribution: Found most commonly on pets throughout Michigan
Key Facts: Usually found near dens of skunks and woodchucks, will bite companion animals near animal dens and occasionally humans
Diseases: Powassan encephalitis

5. Brown dog tick (*Rhipecephalus sanguineus*)

Distribution: Occasionally found in Michigan.
Key Facts: can uniquely survive and breed in indoor environments, has been associated with kennel, shelter, and breeding facilities. Good hygiene practices can prevent indoor infestations.
Diseases: Rocky mountain spotted fever, canine babesiosis, canine ehrlichiosis

Tick Bite and Tick-Borne Disease Prevention

- Use insect repellents containing no more than 30 percent DEET.
- Use repellents that contain permethrin on clothing.
- After spending time outdoors, check your skin and clothes for ticks.
- See your healthcare provider if you have symptoms of fever, rash, body aches or fatigue.

For more information visit: www.michigan.gov/emergingdiseases
Updated January, 2018

Michigan State University Extension Bulletin E3438 | May 2020

Poison Ivy in Michigan

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We have all likely heard the saying "leaves of three, let it be" in reference to poison ivy. This is a helpful starting point, but additional details and background are important for identification. Two different plant species in Michigan are referred to as poison ivy; both are members of the mostly tropical family that contains mangoes, cashews, and sumacs: Anacardiaceae. Eastern poison ivy *(Toxicodendron radicans)* is concentrated in the lower half of the Lower Peninsula (Figure 1) and often grows as a vine with aerial roots (Drife, 2015; Reznicek et al., 2011) (Figures 2 and 3). Western poison ivy *(Toxicodendron rydbergii)* can be found in the Upper Peninsula and the northern and western portions of the Lower Peninsula. Western poison ivy has an upright growth habit (Figures 4 and 5); it does not climb and does not have aerial roots.

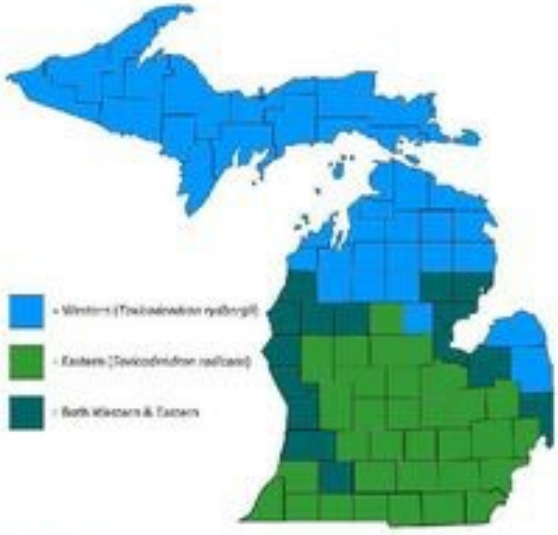
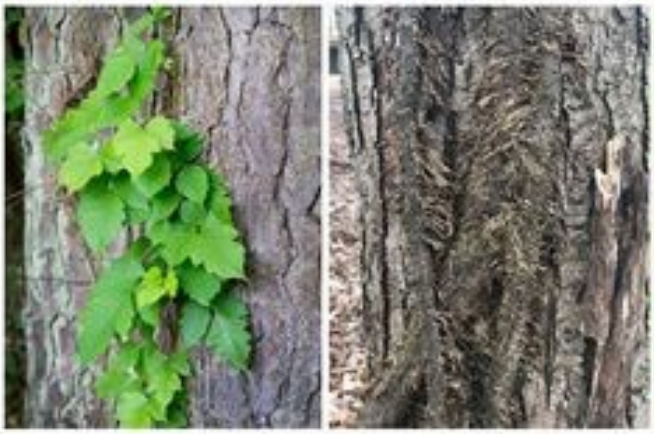
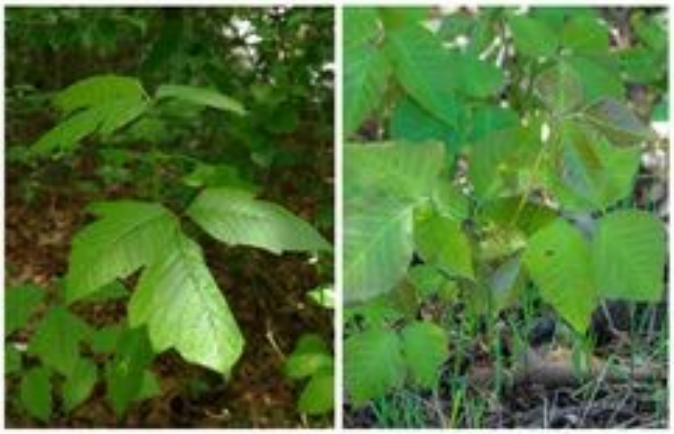


Figure 1. Distribution of Western and Eastern poison ivy (*Toxicodendron rydbergii* and *T. radicans*, respectively) based on Michigan herbaria records from Michigan Flora Online. (Figure by Erin Hill)



Figures 2 and 3. Eastern poison ivy has a vining growth habit and aerial roots to secure it to trees and other objects. (Figure 3 photo by Angela Tenney)



Figures 4 and 5. Western poison ivy has an upright growth habit with no aerial roots (Figure 4) and can often be seen as patches on the forest floor (Figure 5). (Figure 5 photo by Jennifer Yakey-Ault)

MICHIGAN'S VENOMOUS SNAKE

The eastern massasauga rattlesnake is the only poisonous snake that is native to Michigan. It is among the smallest rattlesnakes in the U.S.

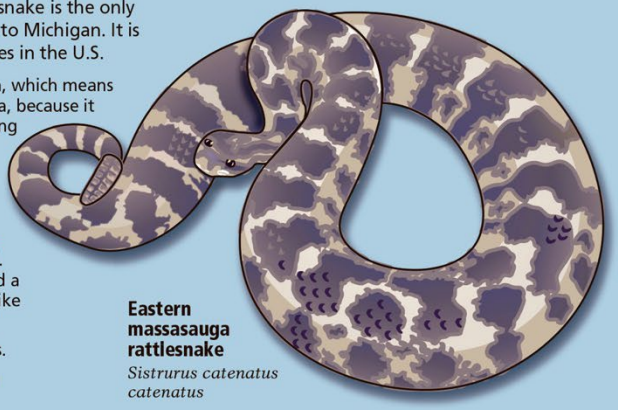
Habitat: It is named massasauga, which means "great river mouth" in Chippewa, because it lives in a variety of wetlands along rivers, lakes and marshes in the Lower Peninsula.

Identification: It has a thick body with a pattern of dark brown rectangular patches on a light gray or brown background. It has a small rattle on its tail and a triangular head shape with cat-like vertical pupils.

What it eats: Insects and rodents.

What eats it: Eagles, herons and small mammals.

Habits: It is a shy, sluggish snake that prefers to leave an area when threatened rather than strike. It will protect itself from anything that it sees as a potential predator.



Eastern massasauga rattlesnake
Sistrurus catenatus catenatus

Encountering a massasauga: People are most likely to see one in the open in spring or an early morning when it is sunning itself. It is best to keep your distance. Do not pick it up, and keep pets away. Seek immediate attention after a bite.

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SOURCES: www.enature.com; www.michigan.gov/dnr; dnr.wi.gov; U.S. Fish and Wildlife Service