

Education & Outreach

Through the concept of integrated mosquito management (IMM), BCMC's program uses a combination of methods to reduce nuisance and disease-carrying mosquitoes. Education is an important IMM core concept and community education and outreach continue as an essential element in the 2024 program. Educational presentations are designed to raise awareness of mosquito habitats, the life cycle, and backyard breeding. Presentations are given to community service groups and local government officials, while flyers, brochures, door hangers, bookmarks, and rack cards are hand-distributed or mailed to county residents and visitors. Media are utilized for press releases on important activities, events, and disease updates while communication with neighboring districts and local health departments provides timely and accurate information.



In 2024, BCMC looks to resume the STEM-based elementary educational school program with Bay City Public School and Pinconning School Districts. This partnership involves promoting a first grade "Life Cycle" program that prioritizes hands-on learning to increase student engagement and achievement. Presentations are also provided to adult education classrooms and civic or business groups.

Following Michigan Department of Agriculture and Rural Development Regulation 637, Pesticide Use, multiple-use areas and homeowner-requested property treatments are posted for not less than 24 hours at the primary point(s) of entry immediately after an insecticide application has occurred within the area. Media outlets (newspaper, radio, Facebook, web pages) and print media are utilized to inform residents about mosquito-borne disease activity, EGLE-sponsored scrap tire drives, and program details. Program details include contact information, brand name and active ingredient of insecticides, methods of application, scheduled dates of application, and re-entry restrictions.

Office staff provide customer service to residents by recording service requests and coordinating that information with field and biology staff. The nature of most requests or questions includes residential larval and adult control, mosquito-borne disease, dead bird reporting, scrap tire removal, and breeding habitats. Records of all insecticide applications and property owner notification are handled by office staff and administration. An "extra needs", "long driveway", and "no spray" program are also administered.

Bay County Mosquito Control reports annually to the Mid-Michigan Technical Advisory Committee comprised of both state and local mosquito and health professionals. Membership is maintained in the Michigan Mosquito Control Association, American Mosquito Control Association, and Entomological Society of America.

Best Management Practices

BCMC follows best management practices established by the American Mosquito Control Association for mosquito control services, which include mosquito surveillance, setting action thresholds, larval source reduction, bacterial and chemical control of larval and adult mosquitoes, monitoring for efficacy and resistance, community outreach, record-keeping, and data mapping. Best management practices are also followed for pollinators and include communicating regularly with local beekeepers, conducting ULV treatment when bees are not flying, avoiding direct application of spray to flowering plants, and monitoring environmental conditions when spraying.



Bay County Mosquito Control

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Bay County Mosquito Control

A Division of the Bay County Environmental Affairs & Community Development Department

2024 Program Plan & Comprehensive Community Outreach Plan



Biology Department

Surveillance for immature and adult mosquitoes and the diseases they transmit is tasked to the Biology Department. Larvae are sampled in woodlots, fields, ditches, pools, sewage lagoons, catch basins, and retention ponds while adults are collected from mechanical traps, including New Jersey Light Traps, CDC Traps, and Gravid Traps. Data are collected and analyzed in order to control mosquitoes in the most effective way, reduce disease transmission, and minimize environmental impacts. Insecticide resistance is tracked through bottle bioassays.

Surveillance shows presence and abundance of mosquitoes in various habitats—information that is used to determine optimal times to dispense control materials. Larval and adult mosquito samples are collected, counted, and identified daily using dichotomous keys and dissecting microscopes.

Monitoring mosquito-transmitted diseases will continue for 2024 through processing/testing of adult mosquito vectors and dead birds for the presence of West Nile Virus (WNV), St. Louis encephalitis (SLE), Eastern Equine encephalitis (EEE), La Crosse encephalitis (LAC), and Jamestown Canyon Virus (JCV). Samples are tested at Michigan Department of Health and Human Services Bureau of Laboratories; state and national disease activity is monitored through the MDHHS and CDC.

2024 HIGHLIGHTS

- Implement new GIS-based software system for management of larval control, biology, and office data
- Continue *Cq. perturbans* study along the Hampton Township shoreline to measure 2023 aerial treatment efficacy
- Add rotational insecticides for resistance management in catch basins and adult control operations
- Evaluate effectiveness of liquid versus granular biological insecticides in vegetated ditches

Spring Larval Control



Aerial larviciding of flooded woodlots signals the beginning of the control season. Four aircraft are contracted to apply *Bti* to over 52,000 acres of woodland habitat to reduce the spring *Aedes* mosquito population. Treatment usually begins in mid-April, but the timeline is dictated by weather and larval development. The Biology Department monitors larval growth to guide the program. Three keys to a successful spring mosquito larval campaign include:

1. **Surveillance** of larval populations using pre- and post-treatment dip counts in up to 40 woodlots to monitor program efficacy. Quality control for product placement and dosage are also key.
2. **Calibration** of aircraft to check swath width and dosage
3. **Bti larvicide** kills mosquito larvae but does not adversely affect other wildlife or beneficial insects, people, or pets when applied at the low 3 lb./acre dosage rate.



Training

Technicians attend a 2-day training course then participate in up to 2 weeks of hands-on training with a certified trainer. Staff must pass two MDARD exams to attain certified applicator status in Core and 7F categories. Additional safety, policy, and customer service training are provided. Guest speakers share information on specific, pertinent topics.

Extra Needs Program

This program offers extra service to residents who have a verifiable medical need or severe allergy that warrants additional mosquito surveillance and/or control.



Summer Larval Control

Larval control involves the introduction of products into aquatic habitats to control larvae or pupae to prevent adult emergence. Control also involves source reduction to eliminate breeding habitats as sources for mosquito production. Habitats with a previous history of breeding are monitored with additional emphasis on mapping new sites. About 15,000 sites are checked with treatment occurring about 15% of the time. Technicians respond to residential service requests and check known or new breeding sites.

Nearly 70% of the district's efforts are geared toward larval control. The use of bacterial products *Bti*, *Bacillus sphaericus*, and spinosad are prioritized. Larvicide oils and insect growth regulators are also used in specific habitats. Larval habitats include catch basins, roadside ditches, abandoned pools, flooded fields and woodlots, retention ponds, scrap tires, and containers.

The GIS software system, MapVision, will be utilized for recording field data, lab data, and office calls. This will allow technicians to immediately map and view breeding sites and treatment data. It will also provide us with better management of lab data and citizen requests.



Vehicle Maintenance

Routine vehicle repairs on the district's fleet, as well as other county vehicles, is performed by a state-certified mechanic. Other responsibilities include the repair and maintenance of ULV sprayers, compression sprayers, granular applicators, truck-mounted liquid larviciding equipment, and other agency equipment.

Product Evaluation

Evaluation of control materials and equipment is essential for BCMC to provide effective service. We regularly evaluate the effectiveness of products and operations to verify efficacy and to continuously improve operations.



Adult Mosquito Control

Protecting public health by managing mosquito populations is the district's primary goal. Through control, the number of adult mosquitoes is lessened, thereby reducing their annoyance and disease risk. In order to meet that goal, 10 ultra-low volume (ULV) truck-mounted spray units are used with treatment occurring from sunset to 2:00 a.m., provided mosquito populations warrant treatment and weather conditions are conducive. The ULV machines dispense a small amount of control material that must come in contact with adult mosquitoes in order to effectively control them. Machines are calibrated to ensure the proper dosage is applied according to label recommendations. Droplet size is also measured and adjusted as needed to comply with label recommendations ensuring the spray is as effective as possible. Fogging is focused in areas where there is potential disease risk or where elevated mosquito numbers are indicated by trapping. Recreational areas in the county are also serviced.

No-Spray Program

Residents who prefer their property not be treated for mosquitoes can request "no-spray" status at any time. These parcels are mapped and marked with yellow reflective signs at residential property lines as a visual reminder for technicians to "skip" the property. Audible alarms on fogging equipment also notify drivers of upcoming no-sprays. Often, residents who opt out of adult mosquito control are still in favor of larval control.