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MOSQUITO SURVEILLANCE AND CONTROL

Background

Iowa Department of Public Health has been collaborating with the Iowa State University Medical Entomology Laboratory and the Centers for Disease Control and Prevention to conduct a preliminary assessment of the impact of unusually heavy rains and flooding on mosquito populations in our state. The flooding has resulted in 86 of 99 counties falling under a disaster declaration Iowa Department of Public Health, Iowa State University, and the University of Iowa Hygienic Laboratory continue to operate an arbovirus surveillance program, however enhancements to this program are currently under consideration.

Assessment

Preliminary surveillance demonstrates that *Aedes vexans* and *Aedes trivittatus*, both floodwater mosquitoes, are abundant. Large numbers of floodwater mosquitoes usually appear about 1-2 weeks after heavy rains and flooding. These *Aedes* species are significant pests and a nuisance because they often feed on humans, especially at dusk, and have a particularly painful bite. Many people are working outdoors in flood relief and cleanup efforts are likely being bitten by these mosquitoes.   When these species are in high numbers they can be disruptive to cleanup efforts. However, these mosquitoes do not pose a significant public health threat because they are rarely infected with viruses such as West Nile.

As flood waters recede and the standing water begins to concentrate, the number of flood water mosquitoes may decline, but the number of *Culex* mosquitoes will likely increase. This pattern is seen yearly, however we could anticipate *Culex* populations to be higher than normal due to the stagnant waters left by the flooding. These mosquitoes are a significant public health threat because they are more likely to transmit viruses, such as West Nile. Transmission of West Nile virus to humans does not usually peak until late July or August.

Summary

We are currently dealing with floodwater mosquitoes that have a painful bite and could disrupt relief efforts. As the summer progresses, we will likely be dealing with increased *Culex* populations that have the potential to transmit viruses to humans and animals.

Enhancing Mosquito Surveillance and Control

Local communities concerned about mosquitoes and mosquito-borne diseases may consider implementing or enhancing mosquito surveillance and control measures. Control options include personal protective and environmental measures that can be implemented by individuals (visit this link for more information
http://www.idph.state.ia.us/adper/common/pdf/flood/mosquito_checklist.pdf).

Local governments may consider developing an integrated pest management program to address mosquito control (visit this link for more information http://www.astho.org/pubs/FinalReportPDF.pdf). Alternatively, these services can be provided by appropriately licensed contractors. Attachment A provides suggested components that local governments could consider when drafting requests for bids and contract terms and conditions for contracts for mosquito surveillance and control.

An integrated pest management program to address mosquitoes should target the different life stages of mosquitoes, including larvae, pupae, and adults and should be based upon surveillance data. The links below will provide additional information on adulticides and larvicides, however many of the associated products can only be applied by certified pesticide applicators.

Permethrin, Resmethrin, Sumithrin: Synthetic Pyrethroids For Mosquito Control
http://www.epa.gov/pesticides/health/mosquitoes/pyrethroids4mosquitoes.htm
Naled for Mosquito Control
http://www.epa.gov/pesticides/health/mosquitoes/naled4mosquitoes.htm
Malathion for Mosquito Control
http://www.epa.gov/pesticides/health/mosquitoes/malathion4mosquitoes.htm
Larvicides for Mosquito Control
http://www.epa.gov/pesticides/health/mosquitoes/larvicides4mosquitoes.htm

Appendix A: Suggested Components for Bids or Contracts for a Mosquito Control Program
(Source: http://www.astho.org/pubs/FinalReportPDF.pdf)

Governmental agencies may need to purchase mosquito control services from private vendors. The following reflects components that may be included in bid and/or contract specifications for a quality program and effective results. Any agency contracting for services should contact their agency attorney for guidance.

Description of Services:
- Surveillance, mapping, and monitoring of potential mosquito sites
- Monitoring and suppression of larval and adult populations
- Requirement to use integrated pest/mosquito control methods and materials sanctioned for use by the U. S. Environmental Protection Agency, the Centers for Disease Control and Prevention, the U.S. Department of Agriculture, and the American Mosquito Control Association.
- Public outreach program including:
- 24 hour phone line
- 24 hour response/resolution timeline
- printed materials and media advertisements
- information presentations
- advanced public notices of scheduled sprayings whenever feasible
- provisions to exclude properties from being sprayed at owner's request whenever feasible
- Reports detailing all larviciding, trapping and adulticiding activities
- Reports of public outreach and citizen interaction activities
- Year-end reports summarizing the season's results and activities with recommendations for the following year's program
- Copies of all maps, records, logs, complaints and correspondence upon request
- Description of proposed staffing levels
- Description and number of major equipment items
- Description of the anticipated activities, methods, and materials to be used including:
- Pesticides with EPA Establishment Number and Registration Numbers
- Requirement to use pesticides consistent with FIFRA (Federal Insecticide, Fungicide and Rodenticide Act)
- Application rate
- Acreage to be covered
- Times of coverage
- Details of reporting
- Need for neighborhood notification
- Hotline, if necessary, or a 24-hour local customer access telephone number for complaints and information
- Monitoring data
- Timelines, including whether contract is multi-year, due dates, etc.
- Methods used for surveillance

- Control methods
- Evaluation plan
- Access to real-time surveillance, mapping, and control data, including maps
- Access to contractor personnel during regular hours and after-hours emergency access
- Standards for resolution of complaints, e.g. 24 hour