MAMCA / GMCA Joint Meeting
January 9-11, 2023

Day 1

A. Rick Hayes – GDA
    a. Changes to certification and training
    b. New Agriculture Commissioner – Tyler Harper
    c. Changes to some herbicide uses
    d. Licensing
        i. 2359 commercial contractors
        ii. 736 just do mosquito control
        iii. 1362 have a category 41 applicators license
        iv. 11095 commercial licenses
        v. 10590 private use licenses
    e. 16 field inspectors around the State
        i. Primary focus is risk investigations
        ii. Feed, seed, and fertilizer certifications
    f. CEU questions
        i. T'Maya Tomlinson
        ii. 404-656-4958
        iii. Ag.pest@agr.Georgia.gov
    g. USAg recycling
B. Dan Suiter – On Demand Access to Port Authority
    a. Getting access requires badges and FBI checks
    b. Invasive ants – 5 of the top 100 invasive species in the US
        i. Argentine ant
        ii. Little fire ant
        iii. Big headed ant
        iv. Red imported fire ant
        v. Yellow crazy ant
    c. 73 exotic species found in the southeast
    d. Tawny crazy ants eliminate fire ants
C. Robert Carter - AMCA Update
    a. Dan Markowski – new technical advisor
    b. AMG - advocacy & management group
    c. Washington Day – around May 15
    d. Best Management Practices
        i. BMP for *Culex*
        ii. BMP for Emergency Response
    e. CDC-funding training sessions
    f. Changes to Endangered Species Act coming
D. Corey Day - LaCrosse Encephalitis
    a. Background
        i. Causes disease primarily in children
        ii. Low mortality rate
        iii. Can lead to long-term neurological deficits
    b. Disease clustering
        i. Haddow & Odoi (2009)

ii. Data from 2003-2007
iii. Are LAC clusters spatially persistent over time?

c. Looked at data from 2003-2021
    i. LAC became nationally notifiable in 2003
    ii. Cluster analysis (hot spot)
    iii. County-level incidence
        1. 1261 cases from 2003-2021
        2. Highest risks – consistent clusters
            a. North Carolina
            b. West Virginia
            c. Tennessee
            d. Ohio
    iv. Intermittent cluster in Wisconsin, where a lot of cases were reported historically
    v. High RR in all clusters
    vi. Nearly 75% of reported cases are in clusters

d. Regional info
    i. Most in Appalachian area
    ii. Relatively low case numbers in highly focused areas
    iii. Cluster cumulative incidence is high in these areas

e. Fine-scale persistence
    i. Cases are not found evenly over cluster area
    ii. The same sites are consistently found to have cases and positive vectors
    iii. Long term LAC maintenance is in the mosquito population through transovarial transmission

f. Next step – create models

E. Arielle Arsenault-Benoit - Spatiotemporal Dynamics of Cryptic *Culex* on an Urban to Rural Gradient

a. Urbanization – complex ecological matrix
    i. *Culex* spp and WNV
        1. *Cx pipiens* complex
            a. Cx pipiens v pipiens
            b. Cx pipiens v molestus
            c. Cx quinquefasciatus
        2. Cx restuans
    ii. Cx pipiens dominate throughout season and site class
    iii. Cx restuans are associated with rural and suburban areas
    iv. Cx quinquefasciatus are associated with urban areas

b. Predictors – Maryland/Washington DC
    i. Primary site class
    ii. Secondary site class
    iii. Latitude
    iv. Land cover class
    v. % impervious surface
    vi. City center
    vii. Season – predictor in the early season

c. What about other areas?
    i. Chicago – season explains most of the variations
    ii. Philadelphia – more like Maryland

F. Bryan Boone – Starting McIntosh from Scratch
    a. Background
        i. McIntosh County is poor, low in population, and coastal
        ii. Mosquitoes are bad
    b. Timeline
        i. Implemented a complaint database
        ii. Mapped hotspots
        iii. Larval surveillance
        iv. Landing counts
        v. Began larviciding in the city and larger neighborhoods
        vi. Calibrated ULV machines
    c. A full-time position was established
    d. Had to take over both Parks Department and Code Enforcement
    e. Found funding everywhere
        i. SPLOST
        ii. NACCHO – with Chatham County
    f. Started treating storm drains
    g. Setting up trapping stations
    h. Added GIS mapping capability
    i. Very small program – often just one person
G. Eric Dotseth – West Virginia Tick Talk
    a. 3rd highest incidence of Lyme Disease in US
    b. Lyme is also increasing in dog populations
    c. Tick surveillance
        i. 2013 – veterinary attached ticks
        ii. Worked with DNR collecting ticks on deer, etc
        iii. 2020 – started active tick surveillance
            1. April-July
            2. Sept-Dec
            3. No tick surveillance between end of July-Sept
                a. Avoids larval ticks and
                b. Were doing mosquito surveillance
            4. *Ixodes scapularis* primarily in north and east parts of state
        iv. Did syndromic surveillance for tick bites
            1. Tick bite in fall is likely to be deer tick
            2. Tick appears to be moving south
    d. Alpha-gal syndrome
        i. Hypersensitivity to a sugar in non-primate red meat
        ii. Lag in time between ingesting meat and having a reaction
        iii. Urticaria and anaphylaxis are common
        iv. Reduction in severity may occur after several years
        v. Alpha-gal moiety found in lone star and deer tick saliva
        vi. Caused by lone star tick bite
        vii. Will likely become a reportable condition

Day 2

A. Brian Prendergast – Maryland WNV Update
    a. High correlation between average May temperature and number of WNV human cases
        i. Relates to bird activity
        ii. Relates to mosquito activity
        iii. Specific to area
    b. In the area of Maryland where the study was done, the association was with epi week 18 and 19
    c. What else could drive the cycle?
        i. Bird immunity after a high virus year
        ii. Number of naïve birds
        iii. Presence of the right mosquitoes in sufficient numbers
    d. Compare rates over large areas
    e. Lows of 50s and highs of 60s in May seem to be predictive of low human cases in Maryland
    f. New York and PA are no longer synchronized with the other NE States
B. Leigh Herald – Mosquito Control Safety Program
    a. Occupational Safety Department
        i. Starting in 1777
        ii. Last records kept for public sector employees was in 2015
        iii. Rarely seen in local governments
        iv. Data driven
        v. Changing culture
    b. Georgia is not an OSHA state
        i. Local safety department started in Chatham County in 2015
        ii. Previously, state and local government employees were exempted from OSHA regulations
    c. Department Programs
        i. Risk management and claims
        ii. Compliance
        iii. Accessibility
        iv. Safety training
        v. Communications and special events
        vi. Outreach
        vii. Safety meetings
            1. Monthly/quarterly
            2. Brief and concise
            3. Relevant
                a. Special presentations/guests
                b. Injuries and near misses
            4. Open dialog
    d. Mosquito control in Chatham County has an exemplary safety program
    e. What could the Occupational Safety Program offer?
        i. Partners
        ii. Basic safety training programs
        iii. Injury/incident reviews
        iv. Supervisor safety and leadership program
        v. OSHA 10 and OSHA 30 classes

    f. Basic agenda
        i. Policy updates
    g. Incident reviews
        i. OSHA incidents (region 4)
        ii. Guest speakers
        iii. Training development
        iv. Respond to unmet needs
C. Cheryl Clausel – A Review of the In2Care Trap for Control of *Aedes albopictus* in an Urban Environment
    a. Design
        i. Targets larvae and adults
        ii. Biocide fungus within trap
            1. Taken by female to other oviposition sites
            2. Kills female
        iii. Growth regulator within trap prevents larvae from developing to adults
        iv. Buckner et al, 2017
    b. Trials
        i. Started in 2022
        ii. Set 22 traps over the season based on complaints
        iii. 14 unique locations
        iv. Used landing counts to determine mosquito biting pressure
    c. Results
        i. Mostly saw a decrease in landing rates
        ii. Landing rates decreased initially
        iii. Saw a spike in landing rate with the second data collection, possibly due to trap attraction
        iv. Landing rate numbers continued to decrease after the second data collection
D. Rosmarie Kelly – Looking at Arboviral Disease Risk: a Student Project
E. Dennis Wallette – Unprecedented Levels of WNV and Trying to Get the Public to Care
    a. High number of WNV+ pools in 2022, starting in May
    b. Week 26, the MLE was 22; an MLE of 6 generally indicates human cases will occur
    c. Alerting the public
        i. Social media
        ii. Mass media
        iii. Notification system
    d. Message
        i. Tip and Toss
        ii. Wear repellent
        iii. Stay indoors
        iv. Spray times
    e. Mainstream media was uninterested
    f. Facebook responses by “experts” were amusing and mostly less than helpful
    g. Why didn’t the public care?
        i. Public Health warning fatigue
        ii. Increasing distrust of science
        iii. WNV is “yesterday’s news”
F. Daniel Markowski – Impact of New Pesticide Regulations Pertaining to the Endangered Species Act Protections 2023

a. EPA has a registration review problem
    i. All products must be reviewed every 15 years
    ii. Didn't meet deadline but products could still be used
    iii. Continued process while still meeting FIFRA obligations
b. Going forward
    i. Going to use pilot species
    ii. Will apply those data to all species
    iii. Directionally correct mitigations
c. Plan is to group all mosquito adulticides as one class
    i. Results will depend on which product they use to make decisions
    ii. Not all mosquito control products act the same or affect the same non-targets
d. Case study
    i. EPA
        1. Malathion analysis was based on worst-case scenario assumptions
            a. 2017 – jeopardy for 38 out of 77 listed species
            b. 2022 – no jeopardy after negotiation
        2. Will want to see usage data going forward
    ii. Fish & Wildlife came up with 22 species of concern
        1. Need to do species-specific mitigations
        2. Ended up with reasonable and prudent measures
        3. Want to see usage data
e. Label change with Bulletins Live! Two for endangered species data
    i. HTTPS://www.epa.gov/endangered-species/bulletins-live-two-blt-tutorial
    ii. HTTPS://www.epa.gov/endangered-species/endangered-species-protection-bulletins#quick
    iii. HTTPS://www.epa.gov/endangered-species/endangered-species-protection-bulletins#how-to
f. Need to work closely with local Fish and Wildlife office

G. Panel Discussion – Operational Challenges in Conducting Mosquito Control
a. Members
    i. Tom Moran
    ii. Olivia Bingeman
    iii. Brian Prendergast
    iv. Robert Carter
    v. Ture Carlson
    vi. Chris Lesser
b. Topics
    i. Monitoring for disease
        1. Sentinel chickens
            a. Difficult to implement
            b. Science states that chickens are a good early indicator of EEE in Georgia
        2. Mosquito pools are better early indicators of WNV
    ii. Geographic coverage
    iii. Results turnaround
        1. Can be really long, esp from State Labs
        2. People are moving to in-house PCR, but it depends on personnel and resources

iv. Control measures
    1. Disease response
        a. Response depends on location and circumstances
        b. NPDES permits may have thresholds for response
        c. Urban areas – use aircraft and truck spraying
        d. Disease status trumps mosquito populations
    2. Barrier spray
        a. Mostly nuisance
        b. Mostly used in public places
        c. Non-target impact concerns
        d. Repeat offenders breeding mosquitoes
    3. Adulticiding
        a. Situational movement of products
        b. Rotate modes of action
        c. Many large programs use aerial spray
    4. Notification of spraying
        a. May have no spray zones, except for disease transmission situations
        b. Often 24 hours in advance of spray
        c. Social media notifications occur
        d. Reverse 911 system
        e. Not all states have notifications
    5. Power of Trespass
        a. Safety issue
        b. Can be situational
        c. People aren't the only problem
        d. Code Enforcement powers bring another whole set of issues
    6. Decrepit swimming pools
        a. Usually a code enforcement issue
        b. Richmond County GA
v. Evaluation
vi. Lots of variability

H. State Reports
    a. Delaware – John Badger
    b. Georgia – Tiffany Nguyen
    c. Maryland – Sarah Zastrow
    d. North Carolina – Ryan Harrison
    e. Pennsylvania – Christian Boyer
    f. South Carolina – Chris Evans
    g. Tennessee – Adrianna Sharkey
    h. Virginia – Jeff Hottenstein
    i. West Virginia – Eric Dotseth

Day 3

A. Andrew Insch – Tox-Oasis: An Eco-Beneficial Approach to Mosquito Control
    a. Project goals
        i. Establish tox as a flagship species

        ii. Advance research about mosquito-nectar resource partnerships
        iii. Good outreach project
    b. Educational tool
        i. Use discarded tires as planters
        ii. Support native plant species
    c. Limitations
        i. May need to seed rearing chambers from the wild
        ii. Don't know what plants are most attractive to tox
    d. May lead to better answers about plants that may attract mosquitoes
B. Misty McKanna – Invasion of the Mosquito Catchers
    a. Endemic diseases affect quality of life
    b. The plan
        i. Educate public health concerning mosquito surveillance and control
        ii. Get equipment out to the Health Districts
        iii. Funding is critical
    c. Zika came along and there was funding
    d. Education was the number one focus
    e. State-wide initiative to collect data and use those data to determine a course of action for the area
    f. Even after funding was gone, the infrastructure created was stronger than before
    g. Lessons learned
        i. Get your name out there
        ii. Be helpful
        iii. Provide education
        iv. Diversify – you will be asked about all things creepy crawly
    h. There is a lot of info available out there – don't be afraid to reach out and to help out
    i. Make sure you have the right tools for all situations
    j. The biggest obstacle is ignorance
C. William Nicholson – Trends in Tick-Borne Diseases
    a. Tick-borne pathogens (TBP) are very diverse
    b. Life and maintenance cycles are complex
    c. Tick impact on host
        i. Worry, blood loss, allergic reaction, secondary infection due to wounding
        ii. Tick paralysis
        iii. Tick toxicosis
        iv. STARI
        v. Alpha-gal syndrome
    d. Pathogens
        i. Bacteria
        ii. Viruses
        iii. Parasites
    e. Transmission
        i. Tick bite
        ii. Inoculation of tick body fluids or feces
        iii. Inhalation
        iv. Blood transfusion
        v. Organ transplant
    f. More TBP are being found every year

i. Increase in numbers of TBDs reported
ii. Many more TBDs reported than MBDs

g. Reasons for increases
i. Real
ii. Due to better recognition/reporting
iii. Better testing

h. Invasive tick species – *Haemaphysalis longicornis*
i. Training support is being offered by the CDC
j. Tick-borne viruses are receiving increasing interest
k. Testing of ticks and hosts can be difficult due to cross-reactions
i. Lots of unconfirmed disease cases
ii. Need to treat quickly leads to a lot of "cases" not meeting the case definition

l. Lots of changes have occurred in the systematics of the various pathogens
m. There is a lot that gets overlooked or is emerging/reemerging
i. Arizona, *Rhipicephalus sanguineus*, and RMSF
ii. "RMSF" has become Spotted Fever Rickettsiosis
1. *Amblyomma maculatum* and *Rickettsia parkeri* infection
2. *Rickettsia rickettsii* causes typical RMSF
3. Several others

iii. *Anaplasma* and *ehrlicia* species are being discovered

n. "New" organisms are being found in ticks that may be human pathogens

D. Melissa Nolan – South Carolina Tick Surveillance
a. Ticks are a leading cause of VBDs but very little is being done with ticks
b. Resources
i. Public health programs
ii. Veterinarians
iii. Animal shelters
iv. Various traps/drags
v. Resident submissions

c. 9 species found in 5 genera
i. Lone star ticks are the tick most commonly found
ii. A few species are found in very small numbers

d. Pathogen testing
i. Anaplasmosis
ii. Ehrlichiosis
iii. Theileriosis
iv. Lyme
v. Spotted fever group rickettsiosis
1. Over half of ticks from State Parks have some kind of *Rickettsia* spp
2. High prevalence of *Rickettsia* in dogs from shelters

e. Does interrupted feeding cause a lower disease risk?
f. Do non-disease-causing rickettsia reduce risk from disease-causing rickettsia?
g. Prescribed burns and tick abundance

E. Benjamin Allen – Light from BEACONS, Lessons Learned
a. Invasive species
b. Winter surveillance is good for finding overwintering mosquitoes, both invasive and natives
i. Jurisdictional issues

ii. Disease issues
iii. Dangers associated with systems that collect water, debris, and fecal matter

c. How do invasive get here
    i. Hitchhike
    ii. Can be blown in by hurricanes

d. Expectations for invasiveness
    i. Desiccation resistant eggs
    ii. Container breeders
    iii. Slow movement can be accomplished by movement of oviposition media with eggs and larvae

e. Need a good relationship with the Port Authority
    i. WHO has a protocol
    ii. Need a more systematic process

F. Bobby Moulis – Introduction, Expansion, and Misidentification of Mosquitoes
    a. Chatham has opportunities for introduction of mosquitoes
        i. International airport
        ii. Military bases
        iii. Hurricanes
        iv. Lots of truck traffic
        v. 4th largest port in country
    b. Other ways in which species are "introduced"
        i. Different trap types catch different species
        ii. Trap location plays a big role in what is caught
        iii. Restricted areas can prevent catching some species
        iv. Misidentification of species
            1. *Aedes atlanticus* VS *Ae tormentor*
            2. *Anopheles* sibling species
            3. *Psorophora ferox* vs *mathesoni*
            4. *Culex coronator*
            5. *Mansonia spp* get confused with *Coquillettidia perturbans*
        v. *Culex quinquefasciatus* or *Aedes aegypti* were probably Savannah's first introduced species
        vi. Chatham County Mosquito Control introduced a non-native *Toxorhynchitis* spp to control *Aedes albopictus* – it didn't work well

G. Kevin Card – Drones A to Z in 20 Minutes
    a. History
        i. Drones came on the market in the early 2000s
            1. Pipeline inspection
            2. Agricultural use
        ii. 2012 – FFA modernized and reformed the air space rules
        iii. 2016 – regulations for unmanned aircraft
        iv. 2021 – FFA put out new regulations
    b. DOD Blue List – approved drones
    c. Beyond visual line of sight is needed for mosquito control
    d. Detect and avoid systems
    e. Types of drones
        i. Single rotor
        ii. Multi-rotor

iii. Fixed wing
iv. Hybrid

f. Uses
    i. Surveillance
    ii. Mapping
        1. LIDAR
        2. Orthomosaic
    iii. Release of sterile males
    iv. Larviciding
    v. Adulticiding

g. Considerations
    i. Regulations
        1. FFA public VS commercial
            a. Required to be licensed
            b. Need a different license for every state
        2. Varies a great deal
    ii. Community acceptance
    iii. Feasibility and equipment

h. Why use a drone?
    i. Hard to reach areas
    ii. Good swath accuracy and width
    iii. Small area control
    iv. Can treat 150-200 acres in a day given more airtime than ground time

H. Doug Nelson – From the Beach to the Lake
    a. Started in Chatham County
    b. Moved to Lake County Florida
        i. 1100+ square miles
        ii. 200+ lakes
        iii. Population – 275000
        iv. Varies between densely populated to rural
    c. Came from operational side and moved to management
        i. Budget
        ii. Marketing
        iii. Employees
    d. Big learning curve, esp with plant management
    e. County is very conservative
    f. Very different from CCMC

<u>GMCA</u> <u>Board (2023-2024)</u>
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