

GMCA Annual Meeting
Oct 17-19, 2012

Thanks to all our speakers, and to our members and sustaining and commercial members.

17 Oct 12
First Session

- AMCA Washington Day - Henry Lewandowski
 1. Purpose
 1. Speak to congressmen
 2. Educate ourselves on legislative issues
 2. Issues
 1. Clean Water Act/NPDES
 2. ELC
 3. Endangered Species Act and mosquito control
 4. FQPA appropriations
 5. Wildlife refuges
 3. 10 appointments
 4. Left point papers at the other 5 offices
 5. Accomplishments
 1. Reemphasized a need to pass HR 872
 1. All states have currently implemented the NPDES permit
 2. Implementation varies widely
 3. HR 872 is stalled in the Senate
 4. The Farm Bill is another possible means of killing the pesticide general permit, but an extension is anticipated rather than a new version
 2. Reinforced need for the ELC grant arboviral monies
 6. The mood in Washington was very subdued - partisan politics at work
 7. Congress suffers from a significant lack of information about these issues
- The Future of Arboviral Surveillance in Georgia - Rosmarie Kelly
- Mosquito Control from the PMP Viewpoint - Scot Hodges (Arrow Exterminators)
 1. The beginning
 1. Little knowledge in the pest control industry concerning mosquitoes
 2. WNV brought a need to the commercial market
 2. The knows
 1. What to charge - need to make money
 2. What products to use
 3. How to market this
 4. What results should be expected
 5. What are the negatives - legal issues
 3. Factors to consider
 1. Profit

2. Competition
3. Marketability
4. Customer retention - need to have recurring revenue
4. Materials
 1. What works
 2. What doesn't
 3. What are the costs of doing business
5. Marketing
 1. Add-on service for existing customers
 2. Stand-alone service
6. Challenges
 1. Licensing - CAT 41
 1. New test for supervisors
 2. Recertification hours
 3. Training
 2. Training required for sales staff and service staff
 3. Equipment
 1. Need for mosquito control can be very different
 2. Equipment can be specific for customer need
 3. No longer sell misting systems
 4. Getting control to where it is needed
 5. Avoiding non-target effects
 6. Staffing
 1. Cross-training
 2. Seasonality of control
 7. Must do a good inspection
 8. What about adjoining properties breeding mosquitoes
 1. Educate customer
 2. Reduction, not elimination
 9. Potential for chemical trespass issues
7. Opportunities
 1. Mosquitoes are everywhere
 2. Government mosquito control can't be everywhere
 3. Special events
 4. Happy customers lead to referrals
8. Results
 1. Some issues to overcome
 2. Customers love the service
 1. Customer satisfaction is the measure of efficacy
 2. Seems to work well overall
 3. Techs like the added work
 4. Sales staff like the increased revenue
 5. Company is happy with the increased profit and revenue - 35% increase over the last year

1. Establishing mosquito population levels
 1. Landing rates
 2. Trap counts
 3. Complaints
 4. Prior history
2. Mapping
 1. Sources of larval and adult mosquitoes
 2. Control routes -
 1. 300 foot buffer
 2. Requires creative control solutions
3. Action thresholds
 1. History
 2. Service requests - 2 per block or subdivision
 3. Larvae - one per dip
 4. Landing counts - 5 per minute
 5. Traps - 10 mosquitoes
4. Source reduction
 1. Survey at all complaint sites
 2. Fill out report with proposed control method - signed by homeowner
 3. Maintain contact with county agency responsible for ditches and impoundments
 4. Know the health nuisance abatement policy
5. BioControl
 1. Mosquito fish
 2. Natural predators
6. Chemical control
 1. The label is the law
 2. Larvicides
 1. Mule for catch basin larviciding
 2. Various products
 1. Duplex
 2. Methoprene
 3. Agnique
 4. Bti and Bs
 3. Adulticides
 1. ULV truck spray
 2. Barrier spray - downtown area (Mule)
 3. Looking to add a thermal fogger for future spray in heavy undergrowth
 4. Surveillance
 1. will form the treatment plans for the target area
 2. is done to monitor control efficacy
 5. NPDES
7. Work with the media
8. Record keeping
 1. Keep info daily
 2. Data sheet in trucks

- 3. GIS
 - 9. Mosquito worker safety
 - 10. Security measures to protect trucks and pesticide
 - 11. NPDES seems to be working for Richmond County
 - 1. It forces the program to do things correctly - if we are stuck with NPDES you may as well use it to your advantage
 - 2. Provides more one on one education with the citizens
 - 3. Better planning and execution
 - 1. Routes are better known by techs
 - 2. Better use of man power and resources
 - 3. More work getting done
 - 12. 2012 was a good trial for the new program
 - 1. Lots of rain
 - 2. Extreme numbers of mosquito complaints
 - 3. It was a lot of work, but everything got done
- DeKalb County Update - Juanette Willis
 - 1. Vector control program
 - 2. 2011 (July 23) - 10 year anniversary of first reported WNV positive (bird) in Georgia
 - 3. Putting together a 10 year review
 - 1. Birds
 - 1. 36% of birds tested were positive
 - 2. Largely blue jays and crows
 - 2. GIS dot maps showing positive samples in a band across the county
 - 1. Density analysis shows the defined positive band across central to northern DeKalb
 - 2. All of the county is urban and suburban
 - 3. All data support this
 - 3. Mosquitoes
 - 1. About 24 trap sites
 - 2. Over 4000 trap nights
 - 3. 26 species collected
 - 4. Almost 200 positives
 - 5. Primarily use a tackle box gravid trap
 - 4. Human cases
 - 1. 1 residents, including 2 PVBDs
 - 2. Age range is 15-87
 - 3. 89% of cases occurred August and September
 - 4. Using the data
 - 1. Used the human case location map
 - 2. Laid zip code layering top
 - 3. Set risk level area map for assigning work priorities
 - 4. Allows a more efficient use of resources
 - 5. How is this holding up
 - 1. Mosquito data are still found primarily in high risk area

- 2. Even moved trap sites to areas not trapped previously
 - 5. Door to door education
 - 1. Positives
 - 2. High numbers of mosquitoes
 - 6. Larviciding
 - 7. Bottom line - WNV is life changing
- Mosquitoes and Wetlands - Oscar Flite
 - 1. It all started with a conversation about mosquitoes and leaky septic tanks
 - 2. Turns out the problems were in the same place
 - 3. Fecal coliform and streams, or can you use mosquitoes to detect leaky septic tanks.
 - 4. Some things of interest
 - 1. Mosquitoes have separate specialized sensors and receptor signals for different compounds on antennae and maxillary palps
 - 2. Each is used for different life cycle requirements
 - 3. Some of the captors are for human volatiles (urine and feces)
 - 1. Indole - very big trigger
 - 2. Skatole
 - 3. Thiol
 - 5. Feral coliform study
 - 1. Determine source in two streams
 - 2. Following a packet of water (langrangian approach)
 - 3. Look for obvious sources
 - 4. Develop a baseline for contribution by sediment and bacteria transported on sediment
 - 5. Need
 - 1. Concentrations of fecal coliform in streams
 - 2. Location of septic systems - need to map this
 - 3. Location of sanitary sewers
 - 6. Current results
 - 1. Sanitary sewers are mapped
 - 2. Working on septic
 - 3. Higher numbers of in-stream fecal coliform appear to correspond with septic tanks
 - 4. Most areas with high fecal coliform and septic tanks also have higher numbers of mosquitoes in gravid traps
 - 5. IDs are pending
 - 7. The study is continuing
 - TMVCA - Abelardo Moncayo
 - 1. Lots of diseases, no mosquito and vector control association
 - 2. Formed in 2012
 - 3. First meeting in March
 - 4. Putting together an association
 - 1. Lots of coffee shop meetings

2. Steering committee
 1. TN Dept of Health
 2. TN Dept of Ag
 3. TN Wildlife Resources Agency
 4. University members
 5. Others
3. Approached Sustaining Members
4. Created a logo
 1. 13 stars for the 13 public health regions
 2. Mosquito inspired by *Oc japonicus*
5. Interim board of directors - first election will be held in 2013
6. Regional directors will come from the 3 state regions
7. Committees
 1. Membership
 2. Program
 3. Finance
 4. Public relations
8. Meeting location - Nashville
9. Website
10. Newsletters
11. First meeting
 1. 60-70 people attended
 2. Lots of good talks
 3. Lots of variety
 4. Hope to keep up the momentum
12. One big problem - the No Spray Coalition
5. What about WNV
 1. 3 mosquito control programs dealing with the bulk of the WNV issues in the past
 2. Nashville
 1. Increase seen in human cases from the past few years
 2. Big increase in positive pools in some areas
 3. Very little adulticiding done
 4. No Spray Coalition issues
 3. Memphis-Shelby County
 1. Lots of mosquito trapping
 2. No bird testing
 3. IPM response
 4. Giving gambusia to public
 4. Knoxville
 1. Both LAC and WNV
 2. Lots of education
 3. IPM program
 5. More programs now identified and asked to join the TMVCA
6. Why have an association
 1. Good resource

2. Emergency preparedness assistance
3. Education and training
4. Better knowledge of resources
7. Upcoming events
 1. Fall workshop - Oct 24
 2. Annual meeting - Feb 12, 2012
 3. info@tenmosquito.com
 4. Website - <http://www.tennmosquito.com/>

18 Oct 12
Second Session

- Entomology in Georgia 2012 - Ray Noblet
 1. UGA is a land grant university
 2. Changes at UGA Sciences program
 1. Budget reduction of 21% for extension and research in FY11 and FY12
 2. A 3% additional reduction occurred in FY13
 3. Low student enrollment
 1. 20 undergrads
 2. 45 grads
 4. Cooperative extension being reorganized at the county level
 5. Some loss in extension staff
 3. Issues at UGA
 1. Enrollment issues
 2. Best option is to enroll at another GA system school and transfer into UGA as a junior
 4. Faculty searches
 1. Integrated Pest Management Coordinator
 2. Biological Control
 3. Crop Insect Pest Management - peanuts
 5. UGA Entomology
 1. Very diverse group
 2. Some recent programs
 1. Plant vector biology
 2. Insect symbionts
 3. Mosquito research
 1. Immune response and endocrine system
 2. Control
 4. Black fly lab
 1. Much of the early work was in disease transmission, vector biology, and field control
 2. Started working with Bti in 1981
 3. Colony was established in 1989
 4. Major focus is bioassay development and improvement
 5. New directions
 1. Turgidity and Bti efficacy

2. Feeding rate studies
3. Effects of algae

- Chatham County WNV Outbreak: What the heck are they doing down there? - Bobby Moulis

1. Some background
 1. Northernmost coastal Georgia county
 2. 438 sq miles
 3. A lot of river basins and wetlands
 4. Use CDC, gravid, and exit traps
 5. EEE
 1. Exit trap - passive funnel trap used to catch mosquitoes feeding on chickens
 2. Use sentinel chickens for EEE
 1. One bird set out at for a single night
 2. Only set at one sentinel site
 3. Chickens are tested for EEE 14 days later
 3. Both trap type and habitat selection are important
6. WNV
 1. 2011 - most active year
 1. 214 mosquito positives
 2. 10 human cases
 2. WNV activity varies widely
 3. Gravid traps used almost exclusively
 4. Trap placement is important - place near refuge
 5. Primarily *Culex* spp
7. Comparing the WNV seasons in 2011 and 2012
 1. Differed in timing, scope, and primary focal area
 2. Usual hot spots were still hot
 3. Less activity in 2012
 1. Began later in the season
 2. More immunity in the bird population

- WNV, AMCA, NPDES, and Other Things - Joe Conlon

1. WNV
 1. Since 1999, 35488 cases
 2. 1470 fatalities
 3. A whole lot more WNV- caused mortality and morbidity than any problems associated with control measures
 4. Why is this persistent?
 1. Lots of different hosts and vectors
 2. Vector competency studies muddy the picture
 1. Most effect vectors are *Ae albopictus*, *Oc japonicus*, and *Cx salinarius*
 2. Primary vectors are *Cx quinquefasciatus*, *Cx pipiens*, and *Cx tarsalis*
 3. Flight ranges vary
 4. Activity times vary

5. WNV fatalities are only a small part of the picture
 6. WNV changes lives
 2. The media can be a good thing or a bad thing
 1. Good for public relations
 2. Can cause you problems with public over-reaction and mis-information
 3. Use visual aids
 4. Message points
 1. WNV is here to stay
 2. WNV is serious
 3. WNV is preventable
 1. Personal protection measures
 2. Control poses no undo risk
 1. Bob Peterson has done a great deal of work on this subject
 1. http://entomology.montana.edu/People/RKDPeterson/PetersonandHigley.Communicating_Pesticide_Risks.pdf
 2. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1392230/pdf/ehp0114-000366.pdf>
 2. Control done correctly has exceedingly low risk
 3. WNV has far more risk
 3. Control is effective
 1. Dallas 1966 SLE
 1. Virus pre spray 1/167
 2. Post spray 1/28639
 2. Colorado 2003 2003
 1. Risk reduction treated 89% decrease
 2. Risk increase in untreated area 50%
 3. Other studies show the same
 4. Control is less risky than disease
 1. Very few instances of pesticide-related problems (26 of 1800 studied)
 2. Lots of WNV, including a number of deaths (333)
5. New research suggests that virus-infected mosquitoes react to repellent differently
 1. http://www.ars.usda.gov/research/projects/projects.htm?ACCN_NO=411040&showpars=true&fy=2011
 2. http://www.ars.usda.gov/research/projects/projects.htm?accn_no=411040
3. AMCA
 1. About 1600 members
 2. Lots of different types of people
 3. Members in 52 countries
 4. Supports legislative and regulatory advocacy
 5. Good research publications
 6. GMCA is a sustaining member
 7. www.mosquito.org
 1. Members only areas
 2. Gearing in future more to the public

8. 82nd meeting (2016) will be in Savannah
4. USA Science and Engineering Festival
 1. AMCA was involved in 2012
 2. 200,000 attendees
 3. Lots of heavy hitters
 4. Lots of media coverage
 5. Booth had lots of props, charts, maps, and interactive displays
 1. Hands-on stuff was most effective
 2. Mosquito costume was a big hit
 6. 3rd annual festival will be in the same location but in the fall
5. NPDES Impacts
 1. Increased admin costs are money not being used to protect citizens
 2. Control programs are pushed to more use of adulticides in order to get control
 3. What are the negative impacts
 1. Reducing compliance on IPM measures
 2. Commercial applicators serving rural communities are opting out
 3. Social injustice issues with the rural poor due to shutting down of small contracted programs
 4. Liability fears are pushing the unethical use of human sentinels before adulticiding occurs
 5. There will be a push for more stringent controls nationwide
 6. There are no funds to initiate and maintain the NPDES programs at the federal or state level
 7. Almost had a lawsuit in MA over a health exception for EEE spraying - thrown out by judge
 8. Expect lawsuits in a couple of years after we adapt to the system
 9. No additional environmental protection has occurred due to the NPDES pesticide regulations

Welcome to a new sustaining member - PestAlto Environmental Health Services

- Mosquito Control Efforts of Clarke in Fulton County, GA - Andy Lima, Erica Wyatt, Malcolm Saunders
 1. Operational side
 1. 12 year partnership starting in 2001
 2. Applications include
 1. Larviciding catch basins
 2. Trappings
 3. Barrier spray
 4. Inspections
 3. Started using Natular in 2011 to treat 12000 catch basins
 1. Treat historic hot spots first
 2. Use map to determine locations of sites to be treated
 3. 2011 - bike program initiated for treating some of the catch basins
 4. Use smart phones to capture treatment data
 4. Program specifics

1. 2001 - helicopter survey
 2. Tire pile treatment program
 3. Illegal tire dumping is a big problem in Fulton County
 4. Barrier spray
 1. Focuses on areas with mosquito positives
 2. Will also treat citizen complaints in high risk areas
 3. Seeing good results
 5. Surveillance
 1. 330 trap nights
 2. 30 trap sites
2. The data
 1. Weather conditions
 1. Moderate to extreme drought
 2. Exceptional heat in late June/July
 3. Very warm summer
 4. Early spring - not much winter
 2. Combined sewer system
 1. Dump sewage directly into associated streams
 2. These are being remediate
 3. These were WNV hot spots
 3. Trap sites
 1. 30 total
 2. 15 active each week
 3. 10 in each of three regions (North, Central, South)
 4. Gravid and ABC collections
 5. 2012 - using VectorTest with PCR conformation
 4. Mosquitoes
 1. ID to species
 2. 10-50 per pool
 3. Just tested quincis
 4. 28 pools of 126 WNV+ (22%)
 5. Most positives are from the Central Atlanta area (>75%)
 6. Peak for positives was late July to late August
 7. Overall percent positive for Fulton County is ~7%
 5. Human cases
 1. ~20% of human cases in Georgia are from Fulton County
 2. Lots of viral activity in the area
- Tactical Insecticide Resistance Surveillance with Bottle Bioassay - Jim Dunford
 1. Resistance management - 8 day course
 2. Resistance surveillance measure insecticide resistance as it exists at a particular time and place
 3. WHO had recognized that insecticide resistance is one of the largest barriers to insect control 30 years ago
 4. Eradication programs became control programs due to resistance issues
 5. Resistance surveillance data are incomplete

1. Data collection is hard work
2. Species diversity presents challenges to resistance detection and assessment
3. Important to know what species you are dealing with
6. What causes resistance
 1. Poor spray technique
 2. Insecticide quality
 3. pH and hard water mixed with insecticide can deactivate insecticide more quickly
7. Insecticide resistance mechanisms
 1. <http://pesticidestewardship.org/resistance/Insecticide/Pages/Insecticide-Resistance-Mechanisms.aspx>
 2. Types
 1. Kdr
 2. Esterases
8. BioAssays
 1. WHO assay
 1. Been around a long time
 2. Supplies are hard to get
 3. Use insecticide treated papers
 4. Exposé mosquitoes for a brief period of time
 2. CDC Bottle BioAssay
 1. Fewer supplies needed
 2. Introduce mosquitoes to a treated bottle
 3. These are cheap, practical, and simple
 4. Results from both assays are similar
 5. Measure the response of the mosquito to the insecticide
 6. The longer the mosquito lives, the more resistance it is
 7. 2009. Malaria Journal. Comparison of the two techniques.
9. The basics
 1. Establishes a baseline
 2. There are established diagnostic times and doses listed in the manual
 3. Periodic testing should be done
 4. Change control strategies when resistance is detected
 5. Procedure
 1. 4 treated bottles
 2. 1 control bottle
 3. Make stock solution using either acetone or ethanol
 4. Coat inside of treated bottles
 5. Track mortality at 15 minute intervals
 6. Run for 2 hours
 6. Results (diagnostic time and dose)
 1. 98-100% mortality -susceptible population
 2. 80-97% mortality - possible resistance
 3. <80% mortality - resistance
 7. Synergism exposure assay

10. The future
 1. More mosquito species looked at for diagnostic time and dose
 2. More chemicals looked at to determine diagnostic time and dose
 3. Intensity bioassay
11. Managing resistance
 1. IPM approach
 2. Rotate chemical classes
 3. Monitor susceptibility
 4. Know your target
12. What about the US
 1. Not much is being done
 2. Not many products to rotate through
13. Training is available through the CDC
 1. Manual is available online - www.cdc.gov/malaria
 2. Training - www.cdc.gov/parasites/education_training
 3. Kit is free from CDC - email bottleassay@cdc.gov with request
 4. Info - <http://www.cdc.gov/ncidod/wbt/resistance/assay/bottle/index.htm>

Third Session

- Blood Feeding Patterns of Culex Mosquitoes in Atlanta, 2010-2011 - Rebecca Levine
 1. Project description
 2. Blood feeding results
 1. 81% blood meals were birds
 2. 60 mammal feeds, primarily on humans
 1. Is this contamination?
 2. If it isn't, it might mean Culex does go through a mammalian feeding shift
 3. More mammal feeds in 2010 than 2011
 4. Most mammal feeding occurs in July
 5. Blood meal sources are somewhat situational
 6. Residential areas appear to increase avian feeding
 3. Working on a feeding model
- Drought and Mosquito Populations - Mark Blackmore
 1. Bad mosquito problems in Spring 2012
 1. Wet Spring - heavy March rain
 2. Many years of drought prior to 2012
 2. Mosquitoes
 1. ~58 species found in Georgia
 2. 34 species trapped in Lowndes County
 3. Variety of larval habitats
 1. Permanent
 2. Ephemeral
 3. Containers
 3. Common knowledge
 1. Wet years - good for mosquitoes

2. Dry years - good for people
4. Average weather
 1. Jan ~50 degrees
 2. July ~81 degrees
 3. Rain 53"
 1. 30% early and late
 2. 70% summer
5. Surveillance
 1. Trapping pattern set in 2004-2005
 1. 12 sites
 2. Occasionally add extra sites
 3. Both gravid and light traps
 2. NOAA drought graph
 1. Palmer drought indices
 1. Precipitation
 2. Evapotranspiration
 3. Soil run off
 4. Soil recharge
 2. Palmer Z shows how monthly moisture conditions depart from normal - short term index
 1. <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html>
 2. <http://www.ncdc.noaa.gov/temp-and-precip/time-series/?parameter=zndx&month=8&year=2012&filter=1&state=9&div=0>
 3. Study
 1. Relationship between drought severity and mosquito populations
 1. Lowndes County data show a positive correlation
 2. Smith & Love, 1956
 1. Shift in species dominance
 2. Nightly collections increased
 3. Chase & Knight, 2003
 1. Similar results
 2. May reflect decrease in predators and competitors
 2. First WNV+ in May
 1. Higher number positive than in previous years
 2. Rainfall patterns were odd
 3. FMEL bird data suggest that birds disperse when there is more rainfall
 4. A large vector population at a time of bird nesting leads to virus amplification
 5. There are numerous species-specific patterns related to drought/moisture levels
 4. Other issues
 1. How precipitation occurs
 1. Length
 2. Frequency

- 3. Strength
- 2. Irrigation practices
- 6. The research continues - does what happens in previous years affect what is happening today?
- Impact of CSO Remediation on Mosquito Abundance and Water Quality - Andrea Lund
 - 1. Continuing research on CSOs in Fulton County
 - 2. Previous results
 - 1. CSOs are suitable habitat for quincis to oviposit
 - 2. High organic content reduces number of predators
 - 3. Optimal habitat is stagnant water with sandy bottoms
 - 4. Distance to CSO stream is an important predictor of quinc abundance
 - 5. Clustering of WNV+ occur near CSO streams
 - 3. Atlanta CSOs
 - 1. 7 CSS facilities
 - 2. 1999 Consent Decree issued by the EPA to require Atlanta to fix this problem
 - 1. Separate systems
 - 2. Create storage tunnels underground
 - 3. West area tunnel completed Nov 2008
 - 1. 8 miles long
 - 2. Deep underground
 - 3. Tanyard Creek most polluted CSO creek
 - 4. Reduces dumping of sewer into creeks
 - 1. 2008 - 40 events
 - 2. 2011 - 2 events
 - 4. Study - Tanyard Creek & Peavine Creek (non-CSO)
 - 1. June 2008 - Oct 2011
 - 2. Preremediation collection
 - 3. Percentage of all mosquitoes collected over course of study
 - 1. 89% larvae
 - 2. 87% pupae
 - 3. 46% adults
 - 2. Productivity was up to 260 pupae per dip at CSO creek
 - 3. No pupae at non-CSO creek
 - 4. Why?
 - 1. Phosphate and ammonia higher in CSO creek
 - 2. DO levels lower at CSO creek
 - 3. Very low abundance of natural predators at CSO creek
 - 4. Post remediation
 - 1. Mosquito productivity decreasing
 - 2. DO rising
 - 3. Ammonia levels decreasing
 - 4. Natural predators increasing - did a survey
 - 5. What about WNV risk?

- West Nile Virus in Humans - Melissa Ivey

1. FAQs

1. Flavivirus
2. Historically found in Africa, West Asia, and the Middle East
3. Introduced to the US in 1999
4. No considered an endemic seasonal illness
5. Primarily spread by mosquitoes
6. Symptoms
 1. 80% show no symptoms at all
 2. ~20% have fever
 3. <1% have serious illness
7. Symptoms develop 3-14 days after a bite
8. Prevention - avoid mosquito bites

2. Historical data

1. First detected in GA in 2001
2. Between 2001-2011 GA had 259 cases
 1. 66% male
 2. 60% white
 3. 42% 60 and older
 4. 42% neuroinvasive
3. Most cases seen in Aug and Sept

3. 2012

1. The basics
 1. WNV is reportable
 2. Individuals must have a positive IgM result to be considered an acute case
 3. IgG only cases are not considered acute cases and are not counted
 4. Cases are not released until the investigation is complete
 5. WNV cases are under-reported
 1. No tests, no case
 2. More serious cases will end up being reported
2. Nationally as of Oct 16
 1. 4531 cases reported
 2. 183 deaths
3. GA as of Oct 16
 1. 58 cases
 2. 4 deaths
 3. Stats
 1. 77% male
 2. 74% white
 3. 50% 60 or older
 4. 58% neuroinvasive
 4. Most cases in July and August to date
 5. Still investigating cases
4. Why are we seeing higher cases this year
 1. No one really knows
 2. Lots of factors involved

3. VBDs are naturally cyclical
 4. Except for numbers, the cases are following the same pattern as previously
- Globally Harmonized System of Classification and Labeling of Chemicals - Debra Wolfe-Lopez
 1. Changes to US Hazard Communication Standard changed by OSHA in April
 2. MSDS are now SDS
 3. What's new?
 1. Pictograms
 2. Signal words
 1. Danger
 2. Warning
 3. Hazard statements
 4. Precautionary statements
 4. What hasn't changed
 1. FIFRA
 2. SDS has changed
 3. Other labeling systems can still be used for in-house labels
 5. Training of employees for new labels must be completed by Dec 2013
 6. Manufacturers need to comply by ???
 7. Pictograms
 1. Exploding bomb - unstable explosives
 2. Gas cylinder - gas under pressure
 3. Flame - flash point <200 degrees F
 4. Flame over circle - oxidizer
 5. Corrosive - to skin or metals
 6. Health hazards
 1. Corrosive
 2. Skull - worse acute (CAT 1-3)
 3. Exclamation point - acute irritants and acutely toxic (CAT 4)
 4. Health hazard - chronic/latent;
 1. carcinogen,
 2. mutagen,
 3. reproductive effects or teratogen
 4. Target organ damage
 5. Respiratory sensitized
 6. Aspiration toxicity (do not induce vomiting)
 7. Ecohazard
 8. Two of the pictograms (flame and oxidizer) are very similar but mutually incompatible
 9. Suppose to be simplified
 10. MSDS (SDS) format
 1. Old - ANSI
 2. New - GHS
 1. Order specified
 2. Section names specified

3. Info the same

11. Resources

1. OSHA
2. EPA
3. Best glove - what glove to wear for your specific chemical
(<http://www.showabestglove.com/site/default.aspx>)

● Biological Control Theory - Ian Brown

1. The basics
 1. Use of living organisms to control pest species
 2. Includes organism byproducts - referred to as bio rational agents
 3. Living, self-sustaining, responding to the pest population in a density-dependent manner
2. Why use biocontrol
 1. Reduce pesticide usage
 2. More specific
 3. Help in keeping chemical pesticides useful for need
 4. Resistance issues
 5. Pesticide treadmill - killing pests and predators (a big problem in agriculture)
3. Limitations
 1. Biocontrol is a slow process, not a quick fix
 2. Biocontrol will not eradicate a pest
4. What habitats are best
 1. Stable and undisturbed - poor in seasonal crops
 2. Isolated geographically
 3. In crops, best in those with a high economic damage threshold
5. Types
 1. Classical
 1. Importation and permanent establishment of a natural enemy to deal with an imported pest
 2. Enemy release hypothesis
 3. Goal is to restore natural balance
 4. Needs to be done very carefully
 5. Sometimes the cure becomes worse than the problem
 1. Agent must be specific to the pest
 2. Has to have a good search strategy so it can find the target pest
 3. High fecundity
 4. Very adaptable
 5. Lack predators
 2. Augmentation
 1. Adding to native natural enemies
 2. Buy and apply strategy
 3. Least sustainable
 4. Most common
 5. Approaches
 1. Inundate - buy and supply corrective measure

- 2. Inoculate - release at intervals preventative measure
- 3. Conservation
 - 1. Modify the environment to encourage natural enemies
 - 1. Alter pesticide applications
 - 2. Alter land use strategies
 - 3. Enhance resources
 - 4. Increase habitat diversity
 - 2. Stops the pesticide treadmill in crops with a high economic damage threshold
- 4. What about mosquitoes
 - 1. Fish
 - 1. Most effective
 - 2. 2 genera
 - 1. Gambusia - some issues
 - 2. Killifish
 - 2. Fungi / protozoan
 - 1. *Lagenidium giganteum*
 - 1. Facultative parasite
 - 2. Long-lived resting bodies
 - 3. Mass produced and available
 - 2. A few other species also kill mosquito larvae
 - 3. Aquatic insects
 - 1. Beetles
 - 2. Dragon and damsel flies
 - 3. Others
 - 4. Mermithid nematode
 - 1. Highly host specific
 - 2. Very hard to mass produce - must be done in mosquitoes
 - 3. Work best in clean shallow water
 - 5. Predatory midge
 - 6. Predaceous mosquito larvae
 - 1. Toxorhynchites spp
 - 2. Prone to cannibalism
 - 3. Adults are non-blood feeding (autogenous)
 - 4. Difficult to rear
- 5. Conclusions
 - 1. Most successful are the biorationals
 - 2. Many biocontrol agents are tested
 - 1. Few are effective
 - 2. Even fewer are commercially viable
 - 3. None are good for quick fixes
 - 4. Work best in an IPM program

- Applied Impoundment Management - Will Ricks

- 1. Altamaha Wildlife Management area
 - 1. Combination of fresh and salt marsh

2. Waterfowl management
3. 31389 acres
4. Over 3000 acres of impoundments
 1. Old rice fields
 2. Managed for game and non-game species
 3. Primarily managed for native and migratory waterfowl
 4. 7-8 foot tides twice a day
 5. Dikes and rim ditches
5. Important GA resource
 1. Keeping records since the 1960s
 2. 2010-2011 broke every waterfowl harvest record
 3. 2011-2012 was even better
6. Important bird area
7. High species richness
2. Moist soil management
 1. Shallow water areas in impoundment
 2. High amount of wildlife resources
 3. Manipulate water levels
 1. Promote native vegetation
 2. Resources for wildlife
 1. Slow spring drawdown
 2. Fall flood
 3. Constant invasive species control
 3. Can be bad for mosquito control
3. 2011 - the year of the mosquito
 1. Darien was over-run by salt marsh species
 2. DNRs impoundments were considered the major source
 3. 2 of the three Rhett's Island pools were dry due to issues with the drawdown systems
 4. Surveillance
 1. Aug 18-19
 2. 97.5% of the species were *Oc taeniorhynchus*
 3. There was a problem
 4. Was it actually Rhetts Island causing the problem
 1. There was an initial early season hatch on Rhetts
 1. Flooded and flushed pools
 2. Aerial surveillance - no larvae in any of the pools
 3. Lots of fish
 2. Many 1000s of acres of old rice field contributing to the problem
 3. DNR was not the cause of the problem
4. Changes for 2012
 1. Pools flooded in late spring
 2. Left Rhetts Island pools flooded and with fish
 3. Mosquito issues in impoundments were minimal
 4. Mosquito issues in McIntosh County were minimal
 5. Weather differences

6. Local mosquito control practices changed
5. Made good contacts within mosquito control
6. Managing impoundments for waterfowl AND mosquitoes
7. Education is the key

19 Oct 12

Fourth Session

- Category 41 Compliance - Eric Olsen

1. The mosquito control industry does a great job of being in compliance with FIFRA
2. CAT 41 - mosquito control
 1. 2012 transfer of CAT 31 license holders to CAT 41
 2. Why?
 1. CAT 31 was not a commercial license but was "government only"
 2. It was the only license to cover mosquito control
 3. The introduction of WNV led to a need for a commercial mosquito control license
 4. Commercial applicators were allowed to use the CAT 31 license for mosquito control ONLY
 3. Problems
 1. Big delay in adding CAT 41 to official rules and regs
 2. Commercial applicators continued to get CAT 31 license
 3. They were using it to treat other pests (rodents, fleas, roaches) in violation of the GA Structural Pest Control Act
 4. Solution
 1. CAT 41 added to GA Use and Application Act
 2. *Commercial applicators with a CAT 31 license for mosquito control were switched to CAT 41*
 3. This was done to ensure all commercial applicators were licensed in the appropriate category
 4. Government applicators can apply mosquito control pesticides with either license
3. Commercial compliance
 1. GMCA Board initiated the creation of a license for mosquito control
 1. Worked with GDA
 2. Assistance from UGA Extension
 2. Must have the core General Standards
 3. Need one full-time licensed CAT 41 applicator per business location
 4. Must be insured
 5. Record keeping
 1. Date
 2. Address
 3. Pesticide
 4. Target
 5. Rate

6. Amount
7. Area treated
8. Tech
9. Method
6. Warning sign must be posted at the entrance of all treated areas (4x5")
7. Info must be left for customer
8. Pesticide storage
 1. Locked
 2. Labeled
 3. No leaks
9. Required safety equipment must be available
10. Container disposal - triple rinse and picture before disposal
4. Pesticide myths, legends, and other strange creatures
 1. Bad storage - pesticide hoarding
 1. Old chemical
 2. Discontinued chemicals
 3. Damaged and disintegrating containers
 2. Pesticide in unlabeled or wrongly labeled containers
 1. Problem waiting to happen
 2. People die from drinking what they think is a potable product when it is a pesticide
 3. Unlicensed sellers
 1. Don't buy pesticide from Craig's List
 2. Buy only from known and credible sources
 4. Dispose of containers properly so they can't be used incorrectly

● ULV Application of Larvicides - Charlie Pate

1. Talk from Chris Lesser - Delaware Mosquito Control
2. Target pest - *Aedes albopictus*
 1. Big nuisance
 2. Hard to control with adulticides and larvicide
 3. Source reduction and education are largely a wasted effort
3. Tests
 1. Bti liquid (12AS)
 1. London Fog ULV set to deliver 24.4 fl oz per acre
 2. Set up a field trial with larvae in dishes along spray route - simple test
 3. Concerns
 1. Volatility of product
 2. Dispersal pattern consistency
 3. Behavior of spray cloud unknown for larvicides
 4. How about product deposition
 4. Results
 1. Good results up to 300'
 2. Dropped off after that
 2. Second test was set up with Petri dishes in buckets
 1. Mortality was a bit lower

- 2. Still had good results
 - 4. Downside
 - 1. Product deposition on cars, etc was a problem
 - 2. Need to look at other formulations
 - 3. There are Bti formulations that will work for this type of application
 - 5. Other products tested
 - 1. Methoprene liquid
 - 1. Little to no deposition on cars
 - 2. Tested in a 200 acre residential community using larvae in Petri dishes
 - 3. Some areas were very wooded
 - 4. 12.1 fl oz per acre (1 oz AI)
 - 5. Results
 - 1. Control mortality 66%
 - 2. Almost 100% mortality in treated areas after 16 days
 - 6. Altosid is now labeled for ULV application
 - 6. Needs a machine dedicated to larval ULV application due to need for lower psi (bigger motor)
- Master Naturalist and Mosquito Control - Henry Lewandowski
 - 1. How does mosquito control address environmental concerns
 - 2. Important to educate the public on these issues
 - 3. Examples
 - 1. 23 of 30 staff members have pesticide licenses
 - 2. All control is based on surveillance
 - 1. 40 species
 - 2. 11 of public health or nuisance importance
 - 3. Mosquitoes are tested for arboviruses
 - 4. An IPM approach allows various control approaches, including pesticides
 - 5. FIFRA/NPDES compliance
 - 1. Use treatment thresholds
 - 2. Calibrated equipment at least annually
 - 3. Pesticide efficacy testing
 - 1. Chatham County Culex are resistant to everything but Naled
 - 2. Bottle Bioassay tests will now be done in-house
 - 6. Keeping up with spray nozzle technology for aerial applications
 - 7. Bees
 - 1. Allowed within city
 - 2. 46 beekeepers on list
 - 3. Provide education and training
 - 4. Created spray exclusion zones around known hive locations
 - 8. Mosquito fish
 - 1. Keep a stock of fish at mosquito control
 - 2. Restock fish in areas that have lost fish due to low water conditions
 - 9. Ditching
 - 1. Shipping channel dredging operations create mosquito breeding areas where spoil is deposited

- 2. Spoil sites are ditched, but ditches were still breeding
 - 1. Ditches close together
 - 2. Had to treat entire spoil site
 - 3. Currently cut ditches wider, deeper, and further apart
 - 1. Can spot treat
 - 2. Saving in time and pesticide
- 10. Larvicides - biorationals for targeted control
- 11. Adulticiding is done only in areas with need
 - 1. 8 labeled chemicals for mosquito control
 - 2. Naled is the pesticide of choice
 - 3. Aerial applications are the preferred delivery method
 - 4. Use returnable containers
 - 5. Low hazardous waste producer
 - 6. Hazardous waste is incinerated and disposed of properly
- 4. Education is important
 - 1. Hand out material
 - 2. Publish when possible
 - 3. Community interaction
- Revamping the Hinesville Program - Kenna Graham
 - 1. History
 - 1. New Jersey traps
 - 2. Only adulticides used
 - 2. CH2M
 - 1. 2 mosquito control employees
 - 1. Kenna - everything but spraying
 - 2. Spray guy
 - 2. Program issues
 - 1. NJ traps were in bad condition
 - 2. Traps were not in representative locations
 - 3. Operating expenses were high
 - 4. Storage facilities were poor
 - 5. Citizens were not taken into account
 - 3. Changes
 - 1. Coordinate county program
 - 2. Field training for surveillance
 - 3. Interactive classroom training for mosquito ID
 - 4. Construction maintenance
 - 5. Larviciding
 - 6. Work with citizens - complaint calls
 - 7. Community involvement
 - 8. Public education
 - 9. Work with enforcement side
 - 4. Inventory and data collection
 - 1. All structures gPS'ed
 - 2. Maps made

3. Record keeping updated
 4. GIS created
 5. Created a work order system
 1. Computer based
 2. Complaint sheet
 3. Data collected on hand held
 6. Surveillance
 1. Added gravid traps
 2. Switched from NJ to CDC light traps
 3. ID and pooling for arboviral testing
 4. Bought a microscope camera
 7. Issues
 1. Trap mistaken for a bomb
 2. Bomb squad called
 3. Evacuated neighborhood
 4. Ended well
 5. Now use labels to ID traps
 8. Next year - barrier spray
- Commercial Mosquito Control - Phil Hall (Gregory Pest Control)
 1. Why do commercial mosquito control
 1. Prevent disease transmission to humans and pets
 2. Customer satisfaction - nuisance issue
 2. Need for partnership with municipal mosquito control and mosquito control associations
 3. What can be done
 1. Barrier spray applications to yards and other areas
 2. Larvicide to breeding sites
 1. Discarded tire mosquito control
 2. Catch basins
 3. ULV applications
 1. New service
 2. Can do both oil- and water-based product application
 4. Biocontrol
 5. Source reduction
 1. Aquatic plant control
 2. Elimination of standing water
 4. Follow FIFRA
 5. Minimize non-target effects
 6. Consumer safety
 7. Who does this benefit? Everyone.

Business Meeting

2012-2013 Board

- President - Fred

- VP - Ian Brown
- ST - Jerry
- Director
 - 1st year - Alan Gaines
 - 2nd year - Jeff Heusel
 - 3rd year - Kenna Graham
- Industry - Julie Fogg
- Public Health Rep - Rose
- Extension Rep - Elmer

Meeting update

- Attendance per session - 43
- Total attendance - 52
- 38 attended banquet

Minutes from August meeting

- 3 guests from GPCA
- Need for a county list of programs and suppliers
- Also need for list of commercial applicators by county
- Elmer Gray - liaison between GPCA and GMCA
- \$10270 in bank as of Oct 17

New business

- Distribution of registration materials by email rather than blanket mailing
- Will mail out materials to anyone without an email address