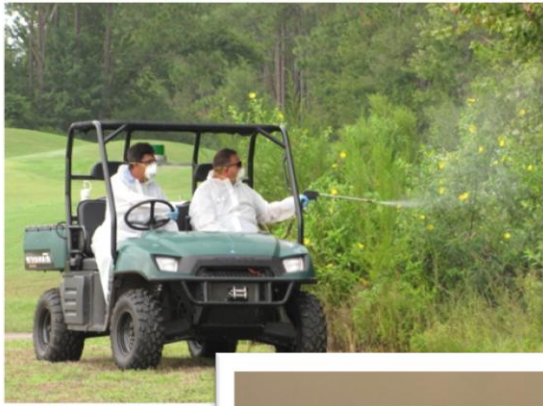




2011 ANNUAL



PROGRAM REPORT



ANASTASIA MOSQUITO CONTROL DISTRICT

of St. Johns County

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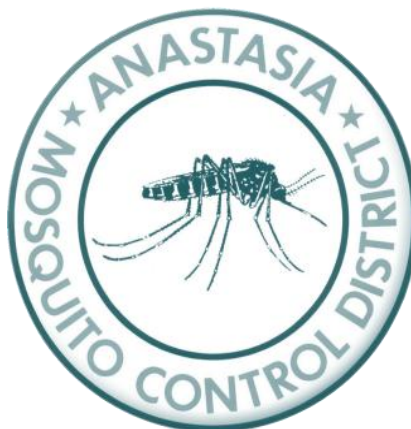
(904) 471-3107

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Mission and Goals

- To preserve and protect the people from mosquitoes and mosquito-borne diseases.
- To reduce/control mosquitoes through integrated pest management based on environmentally friendly and cost effective methods.
- To minimize negative impacts on people and other living things based on valid scientific data, peer review and public hearings.
- To spend public funds prudently.
- To become recognized as one of the leading mosquito control districts.



The Director's Message

In 2011, AMCD promoted best management practices for integrated mosquito management. AMCD answered 1,764 customer service requests for the control of mosquitoes and mosquito-borne diseases, especially salt marsh mosquitoes in the Ponte Vedra and North City areas. The residents of St. Johns County have been free of any mosquito-borne diseases for the last 8 years. Surrounding counties, Duval with 23 WNV human cases and Clay with 3 human cases, were under a mosquito-borne illness alert, where St. Johns County was not. Also, AMCD provided a significant amount of professional service for federal and state government agencies, the US military, national, state, and local professional associations, communities, clubs, and private companies and or organizations, as well as several international universities & organizations.

We at AMCD expanded our school program, public relations and education events in 2011. AMCD successfully organized and provided 21 **CEU's** to our employees and employees from other districts and organizations through the 8th annual workshop and salt marsh mosquito management, and **AMCA's** symposium on insecticide resistance management was held in Anaheim, California, March 20-24, 2011.

AMCD promoted best management practices for ground ULV application of adulticides to control mosquitoes. AMCD collected 2,000 used tires for our source reduction program.

The staff prepared for and supported 14 Board meetings and many committee meetings in 2011.

AMCD's Board members and employees are continuing to work together to maintain our mission and achieve our goals. I appreciate and thank the residents, board members, employees, contractors, and all cooperating organizations for their support and service to **AMCD's** programs.

Rui-De Xue, Ph.D.
Director



A Message from the Chairperson



Despite the outbreak of WNV in Duval and Clay county (23 & 3 human cases), 2011 marked the 8th consecutive year without locally acquired human mosquito-borne diseases reported in St. Johns County. This is due to the hard work of our dedicated staff with support from the Board of Commissioners. We worked hard to fulfill the **District's** mission. The District kept the same millage rate for FY 2011/2012, and continued to reduce costs. Thank you to AMCD employees, residents of St. Johns County and other cooperating agencies and organizations for their support.

Ron. Radford
Chair 2011

Board of Commissioners & Appointed Officers



Commissioners

Mr. Ronald Radford, Chairperson
Mrs. Jeanne Moeller, Secretary/Treasurer
Ms. Janice Bequette, Commissioner
Ms. Vivian Browning, Vice-Chairperson
Mrs. Catherine Brandhorst, Commissioner

Appointed Officers by the Board:

Dr. Rui-De Xue, Director
Mr. Wayne Flowers, District Attorney
Ms. Julieann Klein, CPA

Personnel

Full Time Personnel:

Administration	Name	Hire Date
Director	Dr. Rui-De Xue	4/14/03
Administrative Office Assistant	Charolette M. Hall	11/05/07
Accountant	Scott Hanna	7/09/07
Education Specialist	Jessica Phillips	5/30/11
Department of Entomology		
Biological Technician	Mike Smith	11/05/84
Biologist/Ph.D. candidate	Whitney Qualls	3/20/06
Data Manager	Richard Weaver	4/14/03
DEP/AMCD Field Biologist	John Henzler	08/29/11
Education Specialist	Adam Holt	11/3/08 -2/24/11
Base Station		
Supervisor	Kay Gaines	8/07/00
Inspector/Sprayers	David King	2/1/08
	Tom Downey	3/1/06
	Greg Griggs	4/15/91
	Cathy Hendricks	7/08/02
	Patrick Kendrick	4/07/03
	Ken Daniel	9/26/05
	David Strickland	3/10/97
Mechanic	James Wynn	3/04/96
North Station		
Supervisor	John Boone	4/17/06-6/30/11
Supervisor	David Taylor	6/30/11
Inspector/Sprayers	Elaine Scanzani	3/20/02
	Mike Mills	3/31/03
	Vincent Price	6/01/99
	Paul Whatley	7/08/02
Mechanic	Gene Wells	11/26/79
South Station		
Supervisor	David Taylor	2/28/94
	Freddie Allen	7/08/02
	Steve Solana	4/24/00

Personnel

(cont'd)

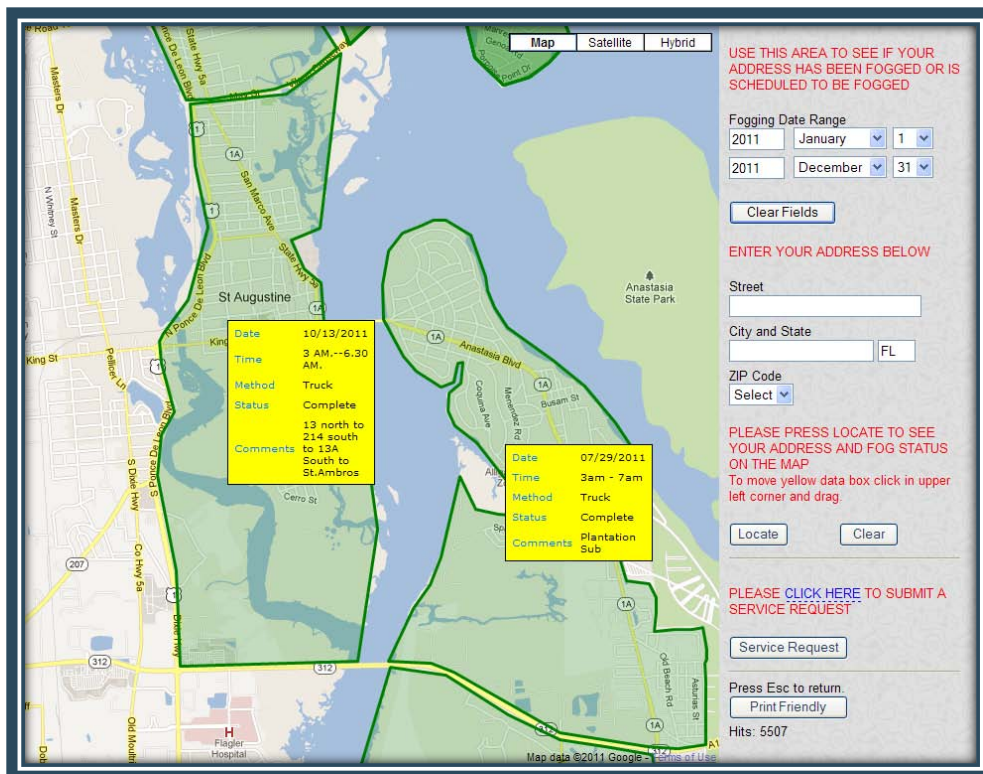
Seasonal Personnel:

Seasonal Full-Time	Name	Dates of Service (2011)
Inspector/Sprayer	Rick Stockley	05/02-10/28
Inspector/Sprayer	Bobby Robinson	05/02-10/28
Inspector/Sprayer	Barry Scott	05/02-10/28
Inspector/Sprayer	Dennis Thierrien	05/02-10/28
Inspector/Sprayer	Jessica Taylor	05/02-07/29
Inspector/Sprayer	Herb Mier	05/02-07/14
Inspector/Sprayer	John Beasley	05/02-06/24
Inspector/Sprayer	Doug Doyle	08/04-10/28
Inspector/Sprayer	Mike Vaughn	08/04-10/28
Inspector/Sprayer	Kevin Courtemanche	08/04-10/21
Intern Student	Shaw Hao	06/07-07/26



Customer Service

In 2011 AMCD continued to use MapVision, the computer software program, for customer service requests. The customers were able to check, from our website, whether their address had been or was scheduled to be fogged. Most of the service requests were complaints about biting mosquitoes, requests for fogging and/or spraying, concerns about pesticide safety, mosquitoes and other insect identification, pesticide applications, personal protection methods, mosquito prevention, commercial mosquito traps, repellents, insecticides, and tools from local residents. The salt marsh mosquitoes in the Ponte Vedra and North City areas created more problems in 2011 than in previous years. We answered 1,764 service requests from local residents by phone, online through our website (approximately 50%), e-mail, fax, and walk-ins. We followed the Florida Statutes, Chapter 388, DACS's, 5E-13, EPA labels, and the District's procedures to provide necessary inspections, fogging and spraying.



Customer Service

(cont'd)

Customer Satisfaction Survey:

In 2011 AMCD implemented two new survey methods. The first new method of surveying AMCD customers was to place a pre-stamped detachable postcard sized survey onto doorknockers, which AMCD Inspector/Sprayers leave when completing a service request. For the second new survey method, AMCD created an online survey and placed a link to **the survey on the AMCD website, on AMCD's Facebook page, and in the confirmation email** sent subsequent to the submission of a service request is. Thirty postcard surveys and forty-eight online surveys were collected, leading to a total number of 78 returned surveys.

The graph below represents the percent of customers who overall agree to each of the following questions (Comparing 2010 to 2011 results).

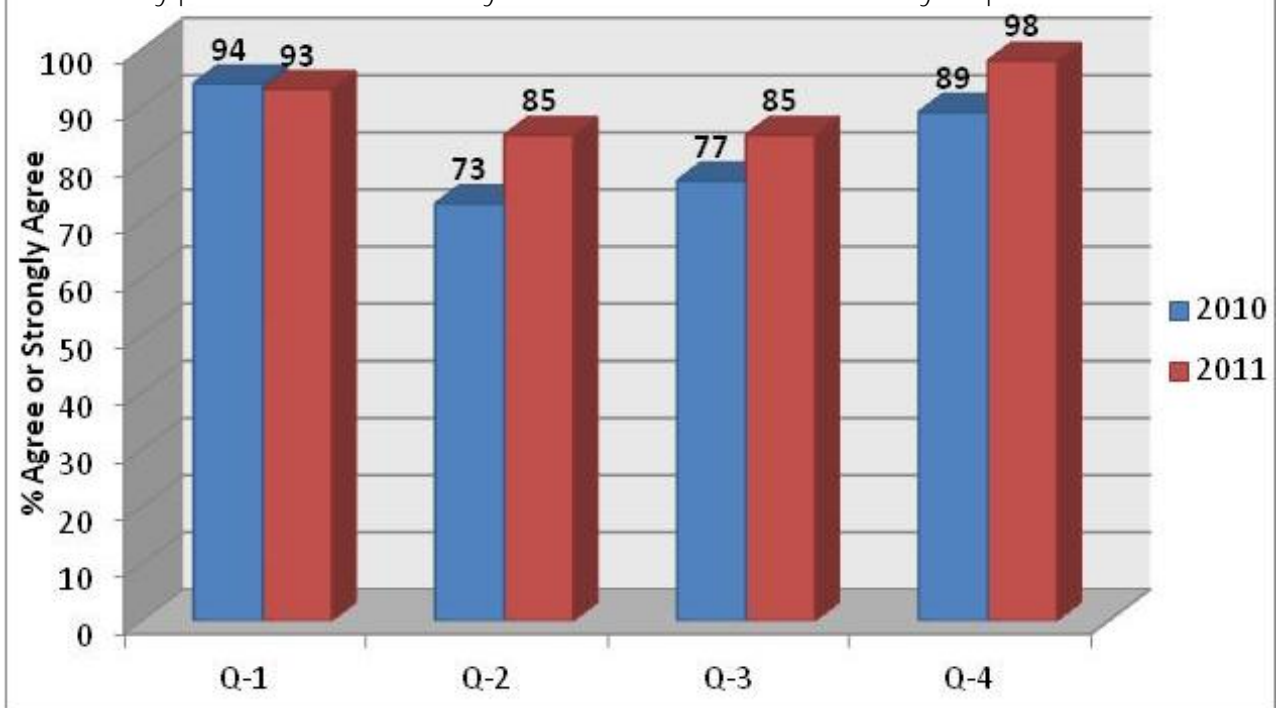
Question 1 - The goal of AMCD is the preserve and protect the community from mosquitoes and mosquito-borne diseases by reducing nuisance and disease spreading mosquito populations.

Question 2 - AMCD staff is informative and professional.

Question 3 - AMCD responds to service requests within the standard 1-2 business days.

Question 4 - I am aware of the measures I can take to protect myself from mosquitoes and mosquito-borne diseases by practicing the 5 D's of Prevention.

These results show that AMCD increased the satisfaction of its customers from 2010 to 2011. In 2012 we hope to continue to increase the satisfaction of our customers and begin the survey process sooner in the year so as to collect more survey responses.



Professional Service

Anastasia Mosquito Control District of St. Johns County (AMCD) works in cooperation with a number of related professional agencies. Those listed below briefly describe the work associations with AMCD in 2011:

Associations:

AMCA (American Mosquito Control Association) & FMCA (Florida Mosquito Control Association): AMCD is a sustaining member of the AMCA & FMCA. Dr. Xue organized a **symposium for the AMCA meeting on “Insecticide resistance & resistance management”**, Anaheim CA, March 20-24. Three presentations were given at the AMCA meeting in March and Five at the FMCA meeting, Jacksonville, FL, November 14-17. Dr. Xue and Ms. Qualls reviewed many manuscripts for the Journal of the AMCA. Dr. Xue served on the Board of the FMCA as Northeast Regional Director and Commissioner Mrs. J. Moeller served as Vice Chair for the Commissioner Section. Ms. W. Qualls continues to serve as a FMCA research committee member, and won 2nd place for the student award.

ESA (Entomological Society of America) & SOVE (Society for Vector Ecology): Dr. Xue **reviewed several manuscripts for the “Journal of Medical Entomology” “Environmental Entomology” and the “Journal of Vector Ecology” and attended the SOVE Board meeting** and other meetings, September 24-29.

FASD (Florida Association of Special Districts): AMCD is a member.

International, National, and Federal Agencies:

- Dr. Xue was invited to visit Shanxi CDC and gave a talk about surveillance and control of mosquitoes in Florida during his annual vacation.
- Dr. Xue was invited to organize and give a lecture about repellents at the 2nd International Forum for Surveillance and Control of Mosquitoes and Mosquito-borne Diseases, Beijing, China, May 23-27, 2011.
- Dr. Xue was invited to give a presentation about spatial repellent at the Armed Forces Pest Management Board meeting, Washington DC, Nov 3, 2011.
- The Hebrew University of Jerusalem, Israel (Dr. G. Muller), traps and toxic baits
- Beijing Institute of Microbiology & Epidemiology (Dr. T. Zhao). Resistance, vector competence, control methods

USDA (United States Department of Agriculture): The AMCD Board continued to collaborate on a contract for research on GIS & mosquito populations and mosquito-borne disease surveillance. AMCD also cooperated with the USDA in a study about mosquito traps and attractants, larvicide tests, repellents and employee training and workshop projects. AMCD **cooperated with the Navy’s Center for Entomological Excellence, Jacksonville, FL on** container-inhabiting mosquito control by auto dissemination of the IGR, Pyriproxyfen.

FBI (Federal Bureau of Investigation): Dr. Xue consulted with the FBI and other agencies about the prevention of bioterrorist threats and had meetings with them 3 times in 2011.

Professional Service

(cont'd)

State Agencies/Universities:

Rutgers University's Center for Vector Biology: AMCD cooperated with Rutgers, USDA/CMAVE/ Navy for ovitraps for surveillance and pyriproxyfen against *Aedes albopictus* project.

UF (University of Florida): AMCD cooperated with Dr. J. Day, UF's Florida Medical Entomology Laboratory at Vero Beach to train a Ph.D. student.

FAMU/PHEREC (Public Health Entomology Research & Education Center): Dr. Xue and Ms. Qualls cooperated with Dr. H. Zhong to check the permethrin decomposition from truck tanks before the lab closed.

UNF (University of North Florida): AMCD cooperated with Dr. D. Bowers on Arbovirus research and to train a Ph.D. student.

DACS (Department of Agriculture and Consumer Services): The AMCD has an operational **contract with DACS. AMCD provided the monthly report on time and joined the State's** Mosquito Population Surveillance program. DACS provided training for AMCD employees and made several presentations at the AMCD workshops. Dr. Xue served on their research committee as a member to review grant applications.

DOH (Department of Health): The AMCD cooperated with the DOH to conduct county-wide arbovirus surveillance and on news releases.

DEP (Department of Environmental Protection): AMCD and DEP renewed the contract for the field biologist position, funded by grants.

Companies:

AMCD worked with Clarke for a DUET thermal fogging project, **Australia's pest control company's fumigant formulation**, Univar for larvicide and barrier treatment and The American LongRay for thermal fogger machine & backpack fogger tests.

Other services:

DACS's grant reviews (9 applications, Dr. Xue)

Reviewed manuscripts for the following journals in 2011:

- Journal of Medical Entomology (2)
- Journal of Vector Ecology (2, Dr. Xue & Ms. Qualls)
- Journal of the American Mosquito Control Association (5, Dr. Xue & Ms. Qualls)
- Parasitology Research (5, Dr. Xue & Ms. Qualls)
- Pakistan Journal of Zoology (1)
- Journal of Insect Sciences (2)
- Acta Tropica (1)
- Malaria Journal (1)
- Med & Vet Entomol (1)

Surveillance

Mosquito-borne diseases:

AMCD cooperated with the Department of Health to monitor imported malaria & dengue fever through local health providers. AMCD monitored West Nile virus (WNV), Eastern Equine Encephalitis virus (EEE), Saint Louis virus (SLE), Highland J virus (HJ), and California group viruses using 10 sentinel chicken sites around St. Johns County. In 2011, there was 1 imported malaria case and 3 imported dengue fever cases, and no locally-acquired human cases for other mosquito-borne diseases. AMCD bled a total of 60 chickens with 1,780 samples processed once a week from March through December. A total of 4 sentinel chickens tested positive for arboviruses: 2 for EEE (PV station & DuPont Center) and 2 for WNV (Joe Ashton Rd).

Mosquito population:

AMCD conducted surveillance weekly by monitoring adult mosquito populations by performing light trap collections using both CO₂ and octenol as attractants from March 1 to December 2. AMCD operated a total of 45 octenol baited traps and 6 CO₂ baited traps. **The DACS's State Surveillance program collects light trap information** using CO₂ baited traps. The total numbers of mosquitoes collected in CDC light traps baited with octenol and with CO₂ were 14,925 (25 species) and 85,420 (26 species), respectively.

Figures 1 and 2 show the species composition collected in both traps and the seasonality of the mosquito population in St. Johns County (SJC) in 2011, respectively. Landing rate counts (LRC) are performed three times a week at 145 locations to monitor adult biting activity in SJC.

Larvae are regularly monitored and inspected to identify breeding sites and optimize control of immatures before they become adults. There were a total of 5,391 larvae dipped in 2011.

Environmental Parameters:

AMCD monitors 46 rain gauges and 2 tide gauges three times a week to predict when and where larviciding activities may need to take place.

Surveillance

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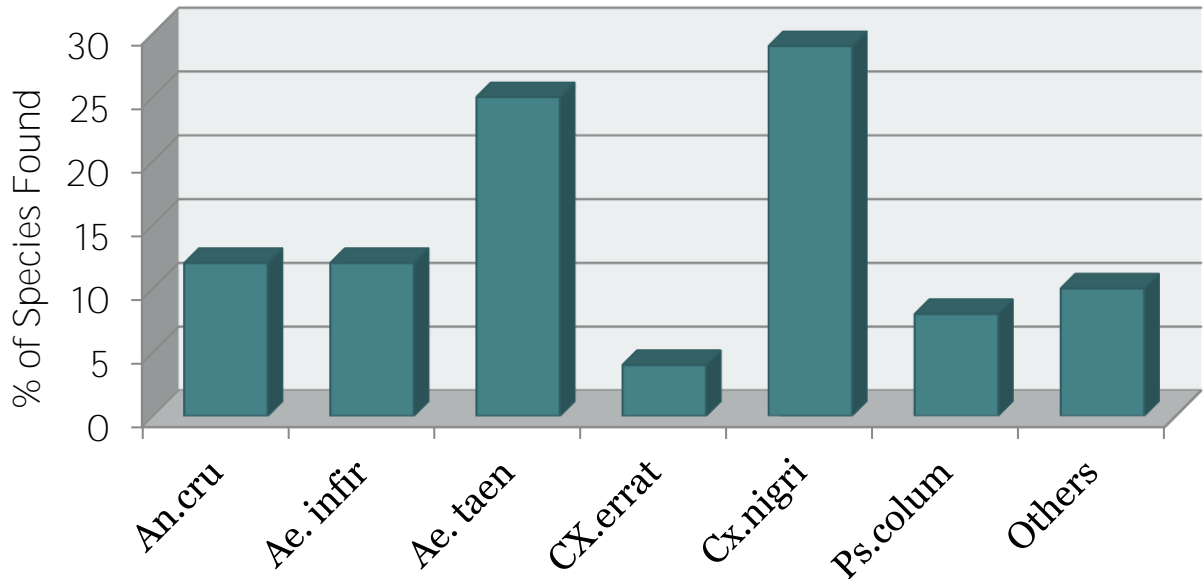


Figure 1. Mosquito species (% composition) collected from March to December, 2011 in St. Johns County in CDC light traps baited with octenol and with CO₂.

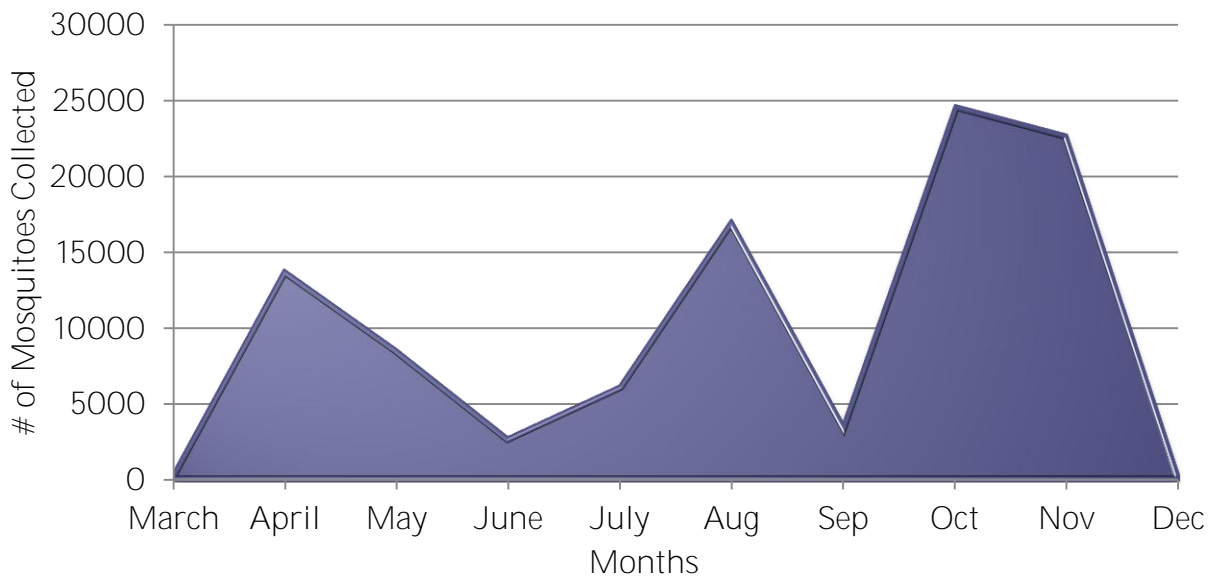


Figure 2. Seasonality of mosquitoes collected in SJC in 2011.

Operation Control

Source Reduction & Biological Control:

AMCD collected and removed 1,959 used tires, educated residents, and emptied numerous containers in residential front and back yards after inspections. Upon many customer requests, AMCD provided mosquito fish (*Gambusia*) for retention ponds and ditches, except when using BTi for larval control. AMCD renewed their contract with DEP for the field Biologist to work on the Salt Marsh Mosquito Control Project.

Larvicides and Larviciding:

Larval inspections were performed on a regular basis every Tuesday and Thursday. The District's strategy for larval control is killing larvae with Bti. In 2011, salt marsh mosquitoes caused a lot of problems in the Ponte Vedra area. Inspector/sprayers treated 2,004 times on a total of 7,091 acres.

Adulticides and Adulticiding:

AMCD utilized thermal foggers to apply ANVIL 10 + 10 or DUET for backyard treatments 100 times (12,342 acres). Adult mosquito control is accomplished by ULV spraying large areas. For adulticiding, Aqualure 20-20 (active ingredient is 20.6% permethrin) was used in 2011. A total of 160 gallons of Aqualure was used to treat 93,323 acres. ULV spraying was conducted 171 times. Most of this was for salt marsh mosquito control in July and August, and WNV vector mosquito control.

Larvicides and Adulticides Used in 2011			
Larvicides	Amount Used	Area Treated	Time Applied
Altosid Briquets	11200 ea.	26 acres	212
Altosid WSP	24188 ea.	75 acres	326
Altosid XR	581 ea.	1 acres	33
Altosid XRG	3283 lbs.	547 acres	125
Bti 200G	40 lbs.	7 acres	6
Bti Briquets	158 ea.	0.36 acres	24
Bti XT	399 gal.	6407 acres	1179
GB 1111	83 gal.	28 acres	99
Adulticides	Amount Used	Area Treated	Time Applied
Anvil 10+10	29 gal.	6,181 acres	33
Aqualure 20-20	160 gal.	93,323 acres	166
Duet	59 gal.	6,161 acres	67
Talstar P	.1 gal	.32 acre	5

Education & Training

School Program:

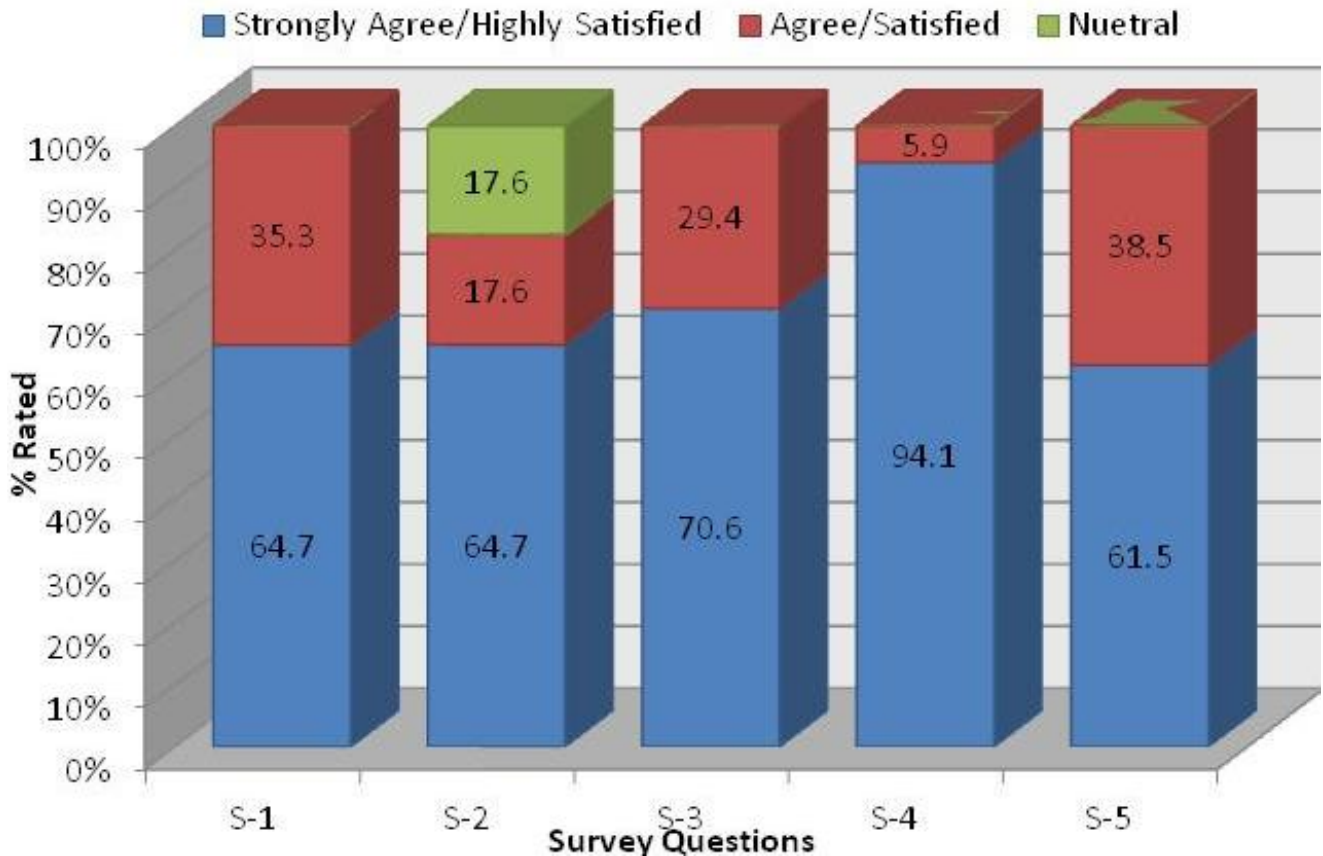
AMCD offers a variety of programs to school aged children (k-12). Our staff employ a variety of teaching methods and hands on science based labs to educate students on mosquito biology, ecology, control & prevention. In 2011 AMCD taught at 13 different Public schools and reached approximately 3182 students (# of students highlighted in red are estimated totals due to staff changes).

School (grade)	Date(s)	# Days	# Staff	# Classes	# Students
Cathedral Parish (7th)	March 2 & 3	2	1	2	40
Fruit Cove (7th)	March 9 & 10	2	1	6	120
Ketterlinus (1st)	March 24	1	4	2	35
Cathedral Parish Field Day	May 18	1	1		
Ketterlinus (1st)	April 7	1	1	2	35
R B Hunt (1st)	April 26-28	3	1	6	100
Liberty Pines (5th)	May 3-5 & 10-12	6	1	9	175
Osceola (1st)	May 16-19	3	1	8	130
Sebastian MS (8th)	May 23-26	4	1	6	120
YMCA: Destiny Church	June 27	1	4		95
YMCA: Swiss Cover	June 28	1	3		45
YMCA: Ponte Vedra	June 30	1	5		135
Otis Mason (Kinder)	Sept. 21	1	2	6	102
Durbin Creek (Kinder)	Sept. 28 & 29	2	1	7	113
Ancient City Kids Days	Oct. 15	1	3		1500
Careers On Wheels	Oct. 25	1	2		200
Pedro Mendez (HS)	Nov. 7 & 8	2	2	1	11
Landrum MS: Science Fair	Nov. 18	1	1		25
Ocean Palms (Kinder)	Dec. 1	1	1	5	95
R. B. Hunt (5th)	Dec. 13-15	3	1	5	106
Totals		38	37	65	3182



Education & Training

(cont'd)



Teacher Satisfaction:

At the beginning on the 2011-12 school year a Teacher Satisfaction survey was created and distributed to all teachers whose classes participated in the AMCD Educational Program. From the 24 participating teachers we received 17 surveys back leading to a return rate of over 70%. The graph above represents the teachers' ratings of approval of the following statements:

- **Statement 1** - AMCD staff exhibited a professional appearance.
- **Statement 2** - AMCD staff demonstrated enthusiasm throughout the lesson.
- **Statement 3** - AMCD staff provided appropriate feedback to students.
- **Statement 4** - AMCD staff demonstrated adequate knowledge of the subject.
- **Statement 5** - Please rate your approval of the AMCD educational program taught at your school.

Over 94% of teachers said that they would recommend the AMCD Education Program to other teachers and schools.

Education & Training

(cont'd)

Community Events/ Public Relations:

To increase public awareness, AMCD performs continuous public outreach and offers a variety of community educational programs. In 2011, AMCD staff participated in and presented information at 38 community events and public outreach programs.

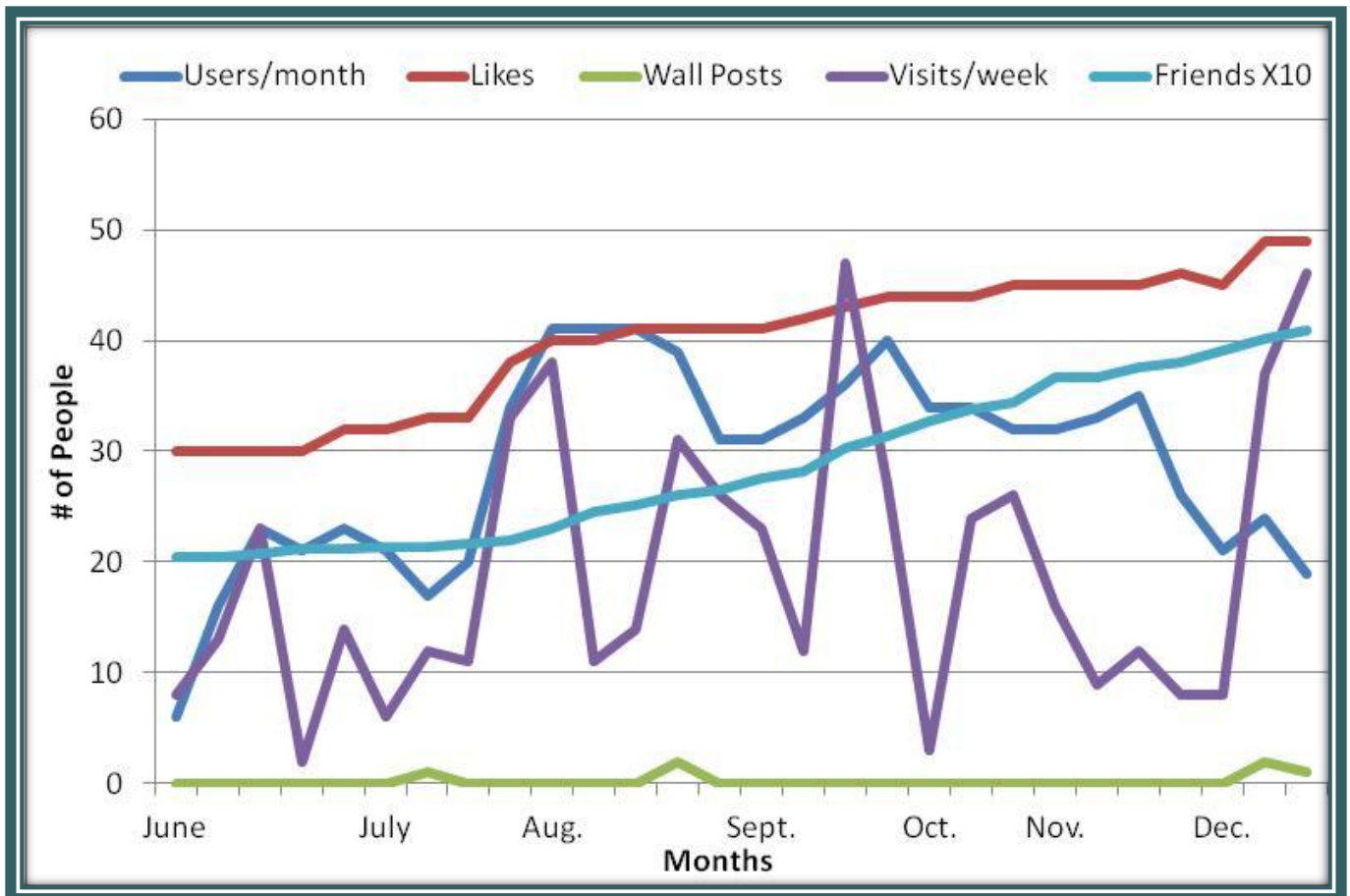
Events	Date	# Staff
HOA Presentation: St. Aug. S. Improvement Assoc.	Feb. 16	1
St. Patty's Day Parade	March 12	3
Lincolnvillle Community Group Presentation	April 12	1
Washington Oaks Earth Day	April 16 & 17	2
Easter Parade	April 24	3
Mosquito awareness Guana River State Park	April 30	2
Round Table Meeting	May 9	1
Homeless Coalition Presentation	May 19	1
Marine Land/Whitney Labs	May 21	2
St. Augustine Air Show	May 28-29	2
HOA presentation: Summer Breeze	June 17	2
Fl. Native Plant Society presentation	June 21	2
The Record (Advertisement)	June 26	1
Public Service Announcement on Government TV	June 26 – July 1	1
Radio Interview: 1240 WFOY	June 27	2
Wednesday Market @ St. Johns Pier	June 29	2
Publix @ Ponte Vedra	July 1	1
Jacksonville FOX News T.V. Interview	July 26	2
Jacksonville FOX News T.V. Interview	Aug. 3	2
Homeless Coalition presentation & Bar-BQ	Aug. 18	3
Bug Island Gazette: Interview & Article	Aug. 22	1
Article in The Recorder – Ponte Vedra	Aug. 26.	1
HOA presentation: Cypress Trace	Sept. 7	1
Round Table Presentation	Sept. 12	1
SJ River State College Career Fair	Sept. 12 & 13	1
Library Presentation (Main Branch)	Sept. 13	1
Phone interview for HOA newsletter	Sept. 14	1
Channel 4 News T.V. Interview	Sept. 14	1
Alligator Farm Teacher Open House	Sept. 29	1
Think Pink Breast Cancer Awareness Event	Oct. 1	2
Cracker Days	Oct. 15	1
Ancient City Kids Days	Oct. 15	3
Senior Retirement Expo	Oct. 22	1
FMCA Annual Conference	Nov. 14-16	6
HOA presentation: Moultrie Trails	Nov. 17	1
St. Augustine Christmas Parade	Dec. 3	4
Beta Sigma Sorority Community Presentation	Dec. 5	1
Hastings Christmas Parade	Dec. 10	4

Education & Training

(cont'd)

Social Networking:

As part of the goal of increasing public awareness about mosquito biology, ecology, control & prevention, AMCD created a social networking page on the Facebook website. This social networking page allows AMCD to connect to St. Johns County residents, answer questions, share photos, and post news stories and research articles about mosquito control. The graph below shows the steady progression of the AMCD's Facebook activity in regards to Facebook users who visit the page each month, like the page, post on AMCD's wall, visit the page each week and the number of friends/followers the page has. Since staff changes in June 2011 the AMCD Facebook page has increased its number of friends/followers from 205 to over 400 residents.



Education & Training

(cont'd)

Employee Continuing Education/Training:

Date	Course
Jan. 5	CPR, Sexual Harassment, & First Aid
Jan. 6	Sexual Harassment, CPR, & First Aid
Jan. 13 & 20	Hazwoper, Biomedical waste/chicken program, BCBSF, Hazwoper Heat illness, HAZWOPER Hazardous Communication, Venomous snake species, & PPE
Feb. 2	IGR against <u>Aedes albopictus</u> , seminar
Feb. 10	VCMS, Venomous plants, NPDES, FRS, Behavior, Deferred Comp, LRC, Pension
Feb. 17	Verbal judo, Surveillance method, & Arbovirus surveillance
Mar 29-31	8 th Arbovirus Surveillance & Mosquito Control Workshop
May. 2-4 & Aug 4, 6	Sexual Harassment, Harassment & Diversity, Mosquito biology, habitats, surveillance, arbovirus, resistance, IPM, NPDES, diseases, larvicides & adulticides, PPE (Personal Protection Equipment), HAZWOPER Hazardous Communication, HAZWOPER Heat Illness, Pesticide Use Review of MSDS Labels & Procedures, Customer service, VCMS and Pocket PC, & Universal waste, fire Safety /Manual
July 28	Salt marsh mosquito management, Mosquito Biology & Mosquito-borne Diseases, & Ovitraps for surveillance
Oct. 28	New ULV machine evaluation, Thermal fogger testing, & Each program report (summary)



Publication

Literatures:

- Xue, R.D., Muller, G.C., Kline, D.L. & Barnard, D.R. (2011). Effect of application rate and persistence of boric acid sugar baits for control of *Aedes albopictus*, *JAMCA*, 27, 56-60.
- Xue, R.D., Qualls, W.A., Muller, G.C. & Zhao, T.Y. (2011). Efficacy evaluation of a fumigant containing permethrin and deltamethrin against vector mosquitoes. *JAMCA*, 27, 168-169.
- Muller, G.C., Xue, R.D. & Schlein, Y. (2011). Differential attraction of *Aedes albopictus* in the field to flowers, fruits and honeydew. *Acta Tropica*, 118, 45-49.
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- Qualls, W.A., Xue, R.D. & Ali, A. (2011). Efficacy of 10 commercially available household permethrin products against *Culex quinquefasciatus*. *JAMCA*, 27, 326-329.
- Qualls, W.A., Xue, R.D., Smith, M., Holt, A. & Moeller, J. (2011). Field evaluation of commercial repellents against the floodwater mosquito *Psorophora columbiae* (Diptera: Culicidae) in St. Johns county. *Florida. J. Med. Entomol* 48, 1247-1249.
- Qualls, W.A., Day, Xue, R.D., J.F. & Bowers, D.F. (2011). Altered response to DEET repellent after infection of *Aedes aegypti* (Diptera: Culicidae) with Sindbis virus. *J. Med. Entomol*, 48, 1226-1230.
- Wang, Z.M., Li, C.X., Xing, D., Yu, Y.H., Liu, N., Xue, R.D., Dong, Y.D. & Zhao, T.Y. (2011). Detection and wide spread distribution of sodium channel alleles characteristic of insecticide resistance in *Culex pipiens* complex mosquitoes in China. *Med Vet Entomol*.
- Holt, J.A., Xue, R.D., Moeller, J.J. & LeBlanc, G. (2011). A five year customer satisfaction survey analysis of Anastasia Mosquito Control District. *Wing Beats*. 22; 17-21.

Website:

In 2011, we frequently updated about our AMCD website and continued to provide online service requests where customers can check whether their area has been or is planned to be fogged. AMCD created a facebook page and an online survey to determine customer satisfaction.



Professional Meetings/ Symposiums

Symposiums, Workshops, & Professional Meetings Organized & Attended by AMCD:

- Jan. 10-12.** The FMCA Fly-In class, Ft. Myers, FL (New Commissioner Mrs. C. Brandhorst & Dr. Xue attended). They visited Collier, Lee, Manatee, and Pasco Mosquito Control Districts before the meeting.
- Jan. 24-28.** The FMCA Dodd Short Course, Ocala, FL (3 Commissioners and 8 employees attended).
- Feb. 1.** Dr. Xue and Mr. M. Smith attended the Navy cooperation meeting about IGRs.
- Feb. 2.** Professor Randy Gaugler from Rutgers University gave a seminar about IGRs control of *Aedes albopictus*. **Dr. Xue gave a talk about AMCD's applied research. Dr. Aaron Lloyd** gave a talk about experiment plan in West St. Augustine.
- Feb. 22.** Dr. Xue attended the FCCMC meeting about NPDES and DACS funds, Alachua.
- Mar.9.** **Dr. Xue and Mr. M. Smith attended Clark's workshop about mosquito control at** Seminole Mosquito Control District.
- Mar.20-24.** The AMCA Annual Meeting, Anaheim, CA (Commissioner J. Moeller, W. Qualls & RD Xue attended the meeting). Xue organized a symposium titled insecticide resistance and resistance management.
- Mar.27-29.** 8th Annual Arbovirus Surveillance and Mosquito Control Workshop (Organized by Dr. Xue).
- April 4-5.** J. Moeller, V. Browning, D. King, & R. D Xue attended the FMCA Tallahassee Legislation meeting.
- Apr. 12-13.** Dr. Xue attended the FMCA Board meeting in Ocala, FL
- Apr. 26.** Dr. Xue & Ms. Brandhorst attended DACS workshop, Manatee County MCD.
- Apr. 30.** DEP/AMCD mosquito control workshop, Guana DEP Education Center.
- May 23-27.** Dr. Xue, as the conference president, co-organized the 2nd International Forum for Surveillance and Control of Mosquitoes and Mosquito-borne diseases, Beijing, China (Commissioner J. Moeller and J. Bequette also attended the meeting.)
- Jun. 14.** Dr. Xue attended the FCCMC, Alachua, FL
- July.19.** M. Smith, Dr. Xue & 2 seasonal employees attended marsh management committee meeting, Whitney Lab.
- Jul. 20.** Dr. Xue attended Navy cooperation meeting at AMCD.
- Jul. 28.** Salt marsh mosquito management workshop (2 CEU). AMCD
- Aug. 24.** Dr. Xue attended DACS grant review committee meeting at USDA lab.
- Sept.25-29.** Dr. Xue attended the SOVE meeting and gave a poster about ULV spray and Deil activity pattern, Flagstaff, AZ.
- Oct.18.** Dr. Xue attended the FCCMC meeting, Alachua, FL
- Nov.1-4.** Dr. Xue attended the 183rd Armed Force Pest Management Board meeting and gave a presentation about spatial repellent to the repellent committee.
- Nov.13-17.** FMCA annual meeting, Jacksonville, FL (5 Commissioners and 6 employees attended the meeting. Five presentations were given by AMCD employees)

Professional Meetings/ Symposiums (cont'd)

Presentations at Professional Meetings/Associations:

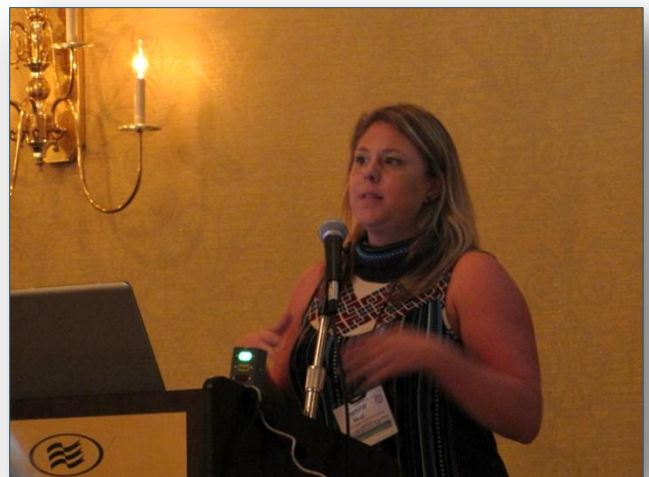
- **Feb. 2. Dr. R. Gaugler, seminar about auto dismission of pyreproxifen for control of *Aedes albopictus*:** RD Xue. Presented AMCD's applied research program.
- **Mar. 20-24. The 77th Annual Meeting of American Mosquito Control Assoc, Anaheim, CA.:** W. Qualls. Insecticide resistance surveillance for mosquitoes in St. Johns (symposium paper), RD Xue, Best management practices for insecticide resistance management, (symposium organizer). T.Y. Zhao, Insecticide resistance in *Culex pipiens* complex, China, presented by Rui-De Xue.
- **Mar. 29-31. The 8th Annual Arbovirus Surveillance and Mosquito Control Workshop, AMCD, St. Augustine, FL.:** RD Xue, Field evaluation of spatial repellents against *Aedes albopictus* and *Aedes taeniorhynchus*, W. Qualls, Response of Sindbis virus-infected *Aedes aegypti* to natural repellents and DEET; M. Smith, Field evaluation of B & G sentinel traps with 3 attractants against *Aedes albopictus* in Elkton, Florida.; A. Thornton, Aquatic invertebrates and mosquito population surveillance in Guana; RD Xue, What have we done in 2010? Overview of programs; R. Weaver, MapVision /VCMS application at AMCD.
- **April 7. St. Johns County Honeybee Assoc.:** R. Radford, Overview of AMCD's Board of Commissioners; RD Xue, Mosquito control does not kill honey bees.
- **April 30. DEP/AMCD's Mosquito & You Workshop, GTM Research Reserve:** J. Boone, Mosquito biology and control methods; R. Weaver, AMCD's operation and customer service; A. Thornton, Aquatic invertebrates.
- **May 18. Invited Seminar, Shanxi CDC, Taiyuan, China:** RD Xue, Surveillance and control of mosquitoes and mosquito-borne diseases in Florida.
- **May 23-27. 2nd International Forum for Surveillance and Control of Mosquitoes and Mosquito -Borne Diseases, Beijing, China:** RD Xue, Conference Presidential Address: Where should we go?—future challenge and direction; RD Xue, Field evaluation of Clip-on spatial repellent against *Aedes albopictus* and *Aedes taeniorhynchus*; J. Bequette, Overview of the AMCD benefits from the applied research program; J. Moeller, Education about mosquito control in Florida.



Professional Meetings/ Symposiums (cont'd)

Presentations at Professional Meetings/Associations (Cont'd):

- **Jun. 21. St. Augustine Native Plant Assoc.:** W. Qualls, Mosquitoes and plants.
- **Jun. 23. Kiwanis Club meeting. St. Augustine, FL.:** R. Radford, Community service and mosquito control budget issue.
- **Jul. 28. Salt marsh mosquito management meeting, AMCD, St. Augustine, FL.:** RD Xue, Salt marsh mosquito control and IMM; W. Qualls, Salt marsh mosquito and diseases; M. Smith, Salt marsh mosquito habitants and seasonal activity; S. Hao, Ovitrap for surveillance of container –breeding mosquitoes.
- **Aug. 8. MS Mosquito and Vector Control District, Cotati, CA (invited lecture):** RD Xue, The development of cooperation projects with other agencies about mosquitoes and vector control,
- **Sept. 25-29. 43rd Annual Conference of Society for Vector Ecology, Flagstaff, AZ.:** RD Xue, Ground ULV spray of permethrin does not have effect on activity patterns of *Psorophora columbiae* in open grass field, northeast Florida.
- **Nov. 3. 183 Armed Force Pest Management Board meeting, Washington DC.:** (invited presentation) RD Xue, Field evaluation of spatial repellents and repellent project update at AMCD.
- **Nov.14. 83rd Annual Meeting of Florida Mosquito Control Association, Jacksonville, FL.:** J. Phillips, Evaluation of two new truck-mounted ULV machines with Aqualuer sprayed against *Culex quinquefasciatus*; R. Weaver, Field evaluation of a new thermal fogger against *Aedes taeniorhynchus*; RD Xue, Best management practices for ground ULV application with permethrin; WA Qualls, Altered behavioral response of *Aedes aegypti* (Diptera: Culicidae) to chemical-based and plant-based insect repellents following dissemination of Sindbis virus; ML Smith, Early population surveillance of *Aedes albopictus* by ovitraps.



Applied Research

1. Early population surveillance of *Aedes albopictus* by ovitraps

This project was in cooperation with Rutgers University's Center for Vector Biology, USDA/CMAVE, and Navy's Center for Entomological Excellence in 2011. The experiments were set up in St. Augustine South (25 traps) and St. Augustine Beach (25 traps). The ovitraps were collected once a week from early April to the middle of June (10 wks). The number of eggs/larvae present varied by location and sampling dates. More eggs/larvae were collected from St. Augustine South than from St. Augustine Beach. High density areas had more *Ae. albopictus* activity. The project will be repeated starting in Feb, 2012.



2. Evaluation of the American LongRay's Machines against adult mosquitoes

This project was cooperated with the American LongRay Company, Navy's Center for Entomological Excellence, and Dr. James Brown. The machines tested included 2 ULV truck-mounted machines (LR-18 Aerosol generator & electric powered BWC-50). The kill rates of *Culex quiquesfasciatus* for both machines were comparable (>80%) with Aqualuer 20-20 (permethrin). Both machines broke down droplet size well.

The thermal foggers with ANVIL 10+10 (Sumithrin) or DUET (Sumithrin) provided sufficient mortality against *Aedes taeniorhynchus* and other species in the field. The machines worked very well against adult mosquitoes. Also, an electric backpack ULV fogger with aqualuer (permethrin) was evaluated against adult mosquitoes in the field. The results showed that the machine broke down droplet size well and kill caged *Aedes albopictus* quickly and compared well with other types of backpack machines.



Applied Research

(cont'd)

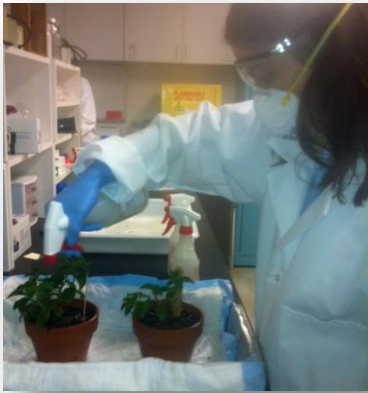
3. Insecticidal Activity of 5 Commercial Mosquito Coils against caged *Anopheles albimanus*, *Aedes albopictus*, and *Culex quinquefasciatus*

Four commercial products from China, containing the active ingredient of different pyrethroid ester insecticides and one product from USA (made in Thailand) containing 15% citronella oil were evaluated against caged *An. albimanus*, *Ae. albopictus*, and *Cx. quinquefasciatus* in a large vehicle storage. The results show that Greenleaf and SuperB mosquito coils, containing 0.08% meperfluthrin resulted in a significant high mortality (>90%) after 15 minute exposure the active ingredients of these showed strong insecticidal activity. The products containing 0.03% dimefluthrin (Lanju) or 0.3% rich-d-transallethrin (Heimaoshen) caused low mortality and the citronella mosquito coil did not result in any mortality.



4. Evaluation of 7 Commercial Insecticide Products Sprayed on Plants against *Aedes albopictus*

This project was cooperated with UNIVAR company to evaluate 7 insecticidal products, which were sprayed on plants against introduced adult mosquitoes. The results showed that the product containing deltamethrin provided the longest residual resulting in mortality of *Ae. albopictus* after being applied to plant vegetation when compared to other products which include the active ingredients bifenthrin and permethrin.



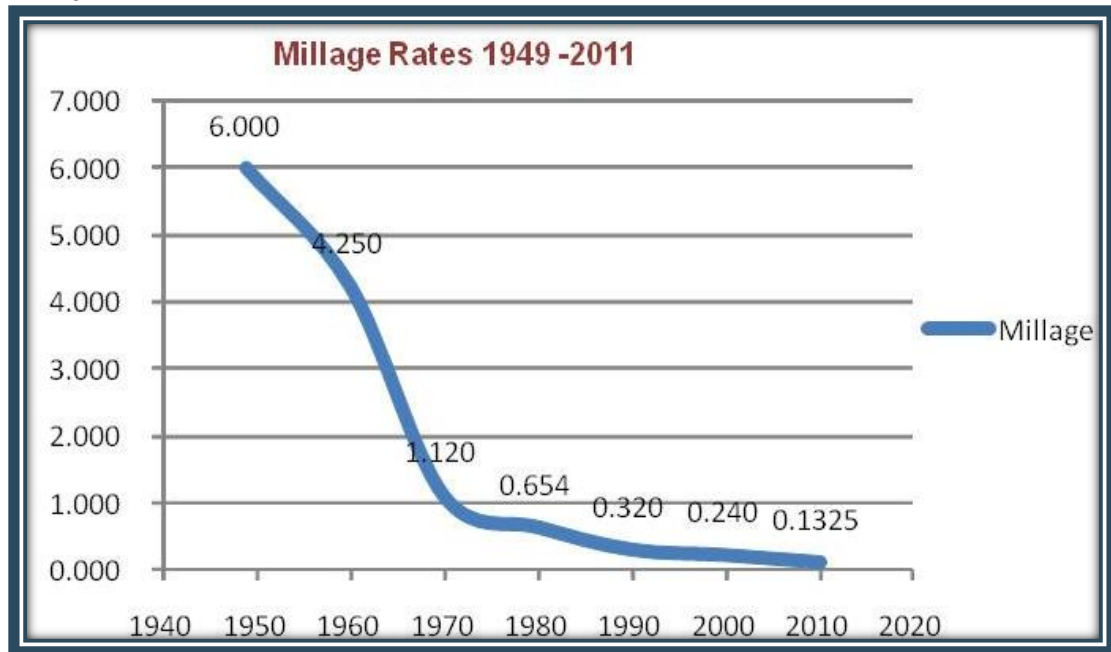
5. Response of Sinbdis Virus-Infected *Aedes aegypti* to Plant-based Repellents

This project was cooperated with University of Florida's FMEL, Vero Beach and the University of North Florida for the last several years. It is part of Ph.D. student project. The Sinbdis virus –infected *Ae. aegypti* were used as the experiment model. The results show that infection of *Ae. aegypti* with SINV decreased the complete protection times of DEET (15%) and picaridin (15%) by 2-2.1 times. When exposed to 2-U (plant-based) and lemon eucalyptus, infected mosquitoes took 1.3 times less for both plant-based repellents to feed on the blood meal than uninfected mosquitoes. Repellent use may be less effective in deterring arbovirus infected mosquitoes from biting than previously believed.



Administration/Supply

Budget: Due to budget restrictions, spending control, dry weather and no aerial spraying, the FY 10/11 budget had a surplus of \$100K by the end of September. The final budget and millage rate at 0.1325 for FY11/12 was approved by the Board at the Final Public Hearing in September 2011. Two full time positions were eliminated in the middle of 2011. All overtime pay was cut through working hour adjustments. Ms. Klein of Lombardo, Spradley and Ann Klien CPAs continued to serve as the auditor.



Board Business: Commissioner J. Moeller was re-elected. New Commissioner C. Brandhorst started from January 1, 2011. Staff prepared and supported for 14 Board meetings and workshops. This work included producing Board books, recording Board meeting minutes and documentation, and preparation of meeting rooms, equipment and facilities.

Insurance: The Board approved AMCD to continue with an HSA health insurance plan with Blue Cross and Blue Shield with better coverage. It became effective January 1, 2011. The commercial insurance packages were approved by the Board in September 2011.

Inventory: The annual physical inventory, monthly tire inventory, and chemical inventory were done regularly. Four trucks and other items were surplus in 2011.

Policies: The District's policy manual, including the Employee Handbook and the Commissioner Handbook were updated in 2011.

Contracts: AMCD renewed the contract with Clarke for emergency aerial spraying, and Southern Helicopter LLC for aerial inspection, larviciding, and necessary adulticiding.

Administration/Supply

(cont'd)

Personnel: Education Specialist A. Holt resigned his position on Feb 24, and J. Phillips was hired on May 30 as the new Education Specialist. Inspector/Sprayer Ms. M. McCoy resigned her Inspector/Sprayer position from the North Station in July 2011. North Station Supervisor J. Boone retired from the North Station in June. Seasonal employees: Four seasonal inspector/sprayers worked for AMCD from May to October, 6 seasonal inspector/sprayers worked for 3 months or less. One intern student worked for 8 weeks.

Recognition/Awards: D. Strickland & V. Price received the Management's Choice Award, G. Griggs received a 20 year Service Awards, J. Wynn received a 15 year Service Award, W. Qualls & T. Downey received 5 year service awards.



Committee Members

2011

SAFETY COMMITTEE:

Safety Coordinator: Mr. Richard Weaver
Supervisor: Mrs. Kay Gaines
Employees: Mr. David King & Mr. Ken Daniel (Base Station), Ms. Elaine Scanzani,, Mr. Eugene Wells (North Station) & Mr. John Allen (South Station)

APPLIED RESEARCH COMMITTEE:

Commissioner: Ms. Janice Bequette (Chair)
Biologist: Ms. Whitney Qualls
Data Manager: Mr. Richard Weaver
Biological Technician: Mr. Mike Smith
Education Specialist: Mr. Adam Holt (end 2/24) & Ms. Jessica Phillips (start 5/30)
DEP/AMCD Field Biologist: Mr. Andrew Thornton (end 5/30), Mr. John Henzler(start 6/29)

OPERATIONAL COMMITTEE: (Ground/Aerial)

Commissioner: Mr. Ron Radford (Chair)
Director: Dr. Rui-De Xue
Biological Technician: Mr. Mike Smith
Supervisors: Mr. John Boone (end 6/30), Mrs. Kay Gaines, Mr. David Taylor

EDUCATION COMMITTEE:

Commissioner: Mrs. Jeanne Moeller (Chair)
Education Specialist: Mr. Adam Holt (end 2/24) & Ms. Jessica Phillips (start 5/30)
Supervisor: Mrs. Kay Gaines
Biologist: Ms. Whitney Qualls
Employee: Mr. Patrick Kendrick

PLANNING COMMITTEE:

Commissioner: Ms. Vivian Browning (Chair)
Director: Dr. Rui-De Xue
Supervisors: Mr. John Boone (end 6/30). Kay Gaines
Data Manager: Mr. Richard Weaver
Biologist: Ms. Whitney Qualls

FINANCIAL / AUDITOR COMMITTEE:

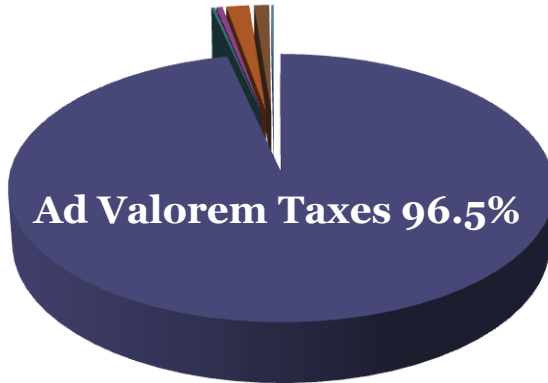
Commissioner: Mrs. Cathy Brandhorst (Chair)
Accountant: Mr. Scott Hanna
Director: Dr. Rui-De Xue
Supervisor: Mr. David Taylor
Administrative Office Assistant: Ms. Charolette M. Hall



Budget

FY 10/11 District Revenues

Total \$2,436,934

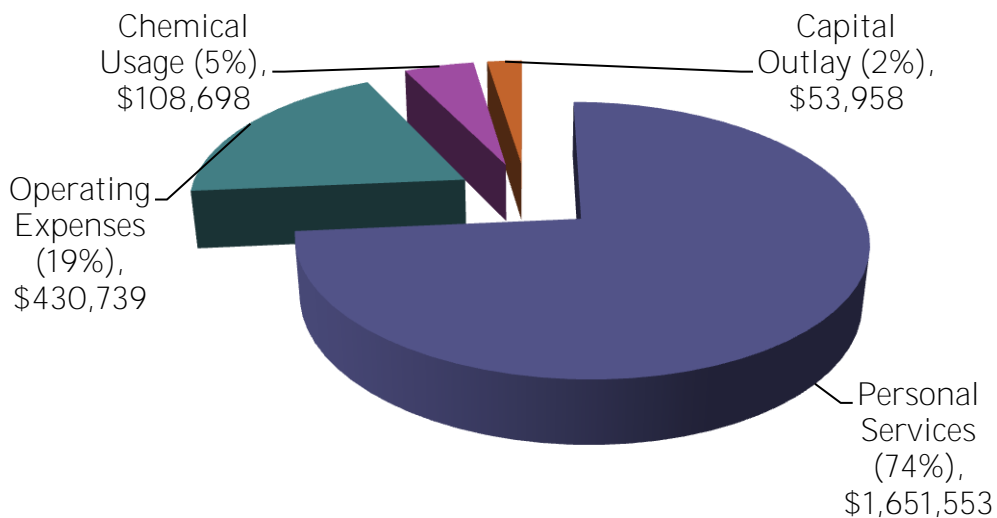


- Ad Valorem Taxes
\$2,351,467
- Prior Year Tax Distrib.
\$5,998
- Interest Income
\$10,916
- Intergovernmental
\$39,000
- Grants \$25,700
- Other \$3,853

Ad Valorem (real property) taxes are the primary source of revenue for the Anastasia Mosquito Control District. Despite the District's levying a consistent millage rate of .1325 for the last three years, decreasing property values have led to decreased tax revenues.

FY10/11 District Expenditures

Total \$2,244,948



In response to declining revenues, the District has reduced expenses, frozen 4 full time positions and suspended some capital outlay programs to maintain consistent levels of service.

Annual Program Report Committee Members

Chair: Dr. Rui-De Xue, *Director / Entomologist*

Members: Mrs. Kay Gaines, *Base Station Supervisor*
Ms. Charolette M. Hall, *Administrative Office Assistant*
Ms. Jessica Phillips, *Education Specialist*
Ms. Whitney Qualls, *Biologist*
Mr. Richard Weaver, *Data Manager*

Acknowledgements

We would like to thank all residents of St. Johns County for their support, as well as the AMCD Board of Commissioners, the **District's** attorney and CPA, all employees, and all contractors, cooperative organizations, and agencies for their help in 2011.

