

GEORGETOWN COUNTY
Public Services Department
Environmental Services Division
Mosquito Control
Annual Report FY 2010



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2010 Mosquito Control Highlights

The Georgetown County Mosquito Control Division provides mosquito control services to all of Georgetown County in 9 control zones.

Wet weather patterns that existed throughout the season significantly impacted mosquito control operations. Seasonal rainfall amounts recorded totaled 42.07 for the County. The highest amounts fell in July, August and September. Mosquito activity was above those recorded in 2009 as a result of 10.71 inches falling in September which contributed to a significant increase of mosquito breeding. All adult and larval survey indices were high and subsequent treatment applications were more than typically expected, especially during October when temperatures reached mid eighty degrees or higher.

The Mosquito Control conducted its first Aerial Larvaciding Operation in August. Our first Adultciding Operation was conducted in July in response to a heavy adult population of "Aedes sollicitans" salt marsh mosquitoes. Malathion was used for control.

West Nile Virus surveillance using Gravid traps continued through the first week of November at one location in the Georgetown Historical District. Mosquitoes collected at this site tested negative for the presence of the WNV.

To commemorate National Mosquito Control Week, personnel of the Mosquito Control Division performed a neighborhood inspection sweep in the West End section of Georgetown. This effort allowed us the opportunity to identify and treat storm drains, perform yard inspections and hand out educational fliers which greatly impacted the adult mosquito population and mosquito control awareness in that area.

Mosquito Control was successful in establishing a mosquito fish program. Several sites were identified and fish were introduced. Use of fish as a supplementary measure to chemicals in controlling mosquitoes can be used to suppress mosquito populations; an added benefit being a reduction in the quantity of pesticides applied to the environment.

Standard Operating Procedures (SOP's) were added or revised to ensure the proper safety and effectiveness of all practices and procedures used by Mosquito Control and to fulfill the requirements sent forth by the American Public Works Association to receive accreditation status for Chapter 27 Vector Management. Training was conducted to ensure that all mosquito control employees understood the new/changed SOP's. Training was also conducted by Georgetown County Emergency Services on Hazardous Communication, Spill Control and Hazardous Materials Awareness to mosquito control staff members on June 29, 2010.

Our surveillance and treatment of three Dredge Spoil Sites that impact the City of Georgetown resulted in a reimbursement of \$6,007.36 from the State Ports Authority per our cooperative agreement.

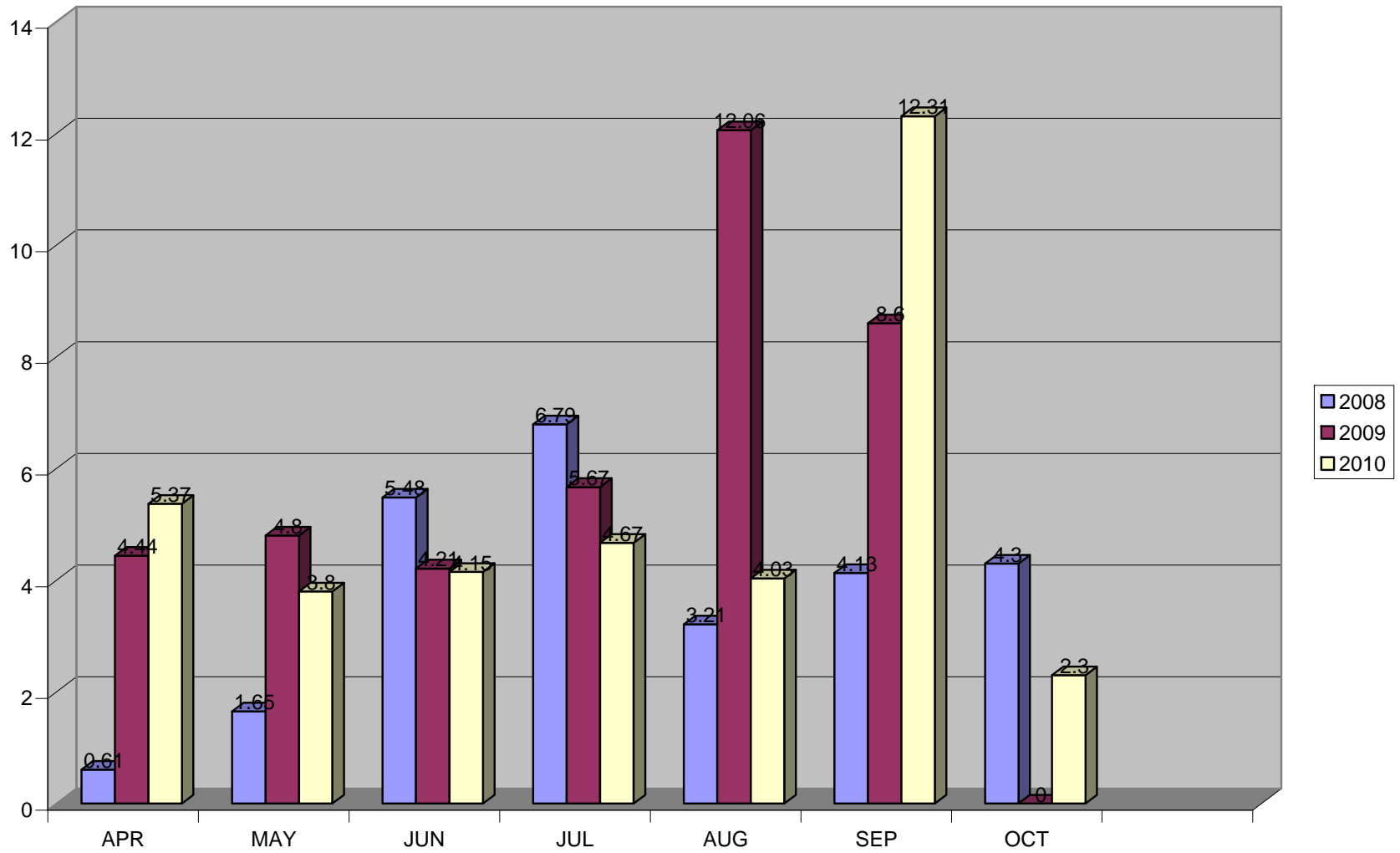
In October mosquito control personnel performed maintenance and refurbishment of 14 New Jersey light traps and 3 ULV trucks mounted spray machines.

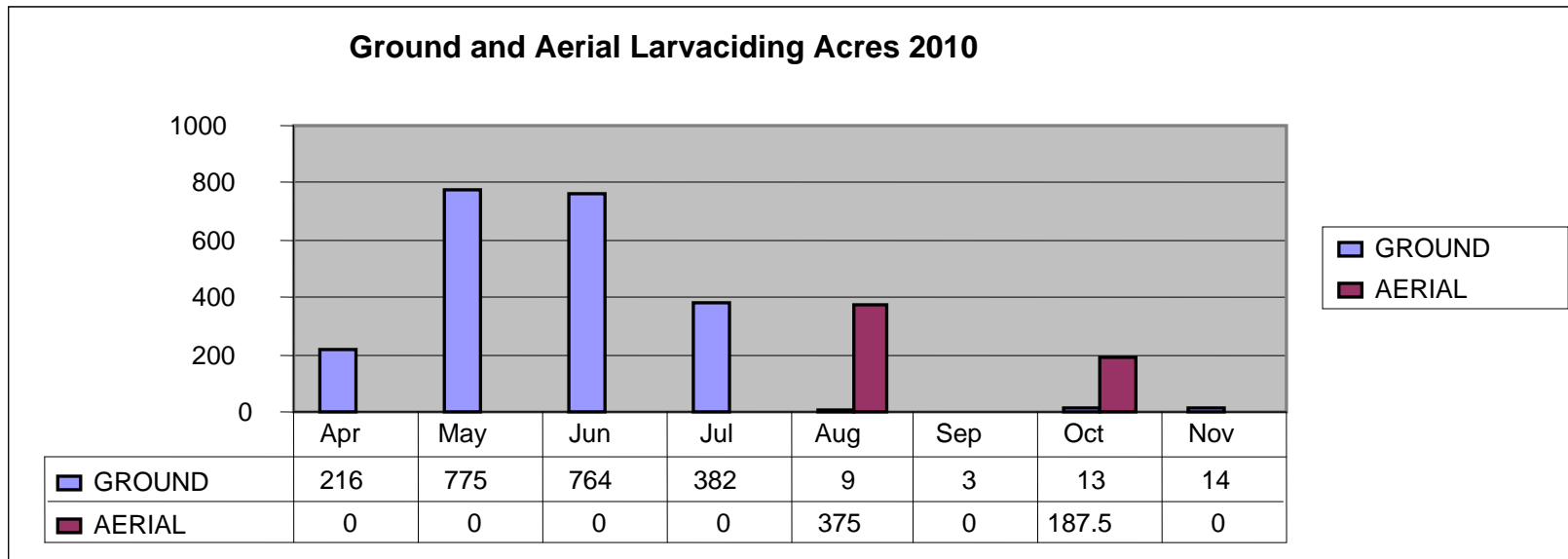
Supervisory personnel conducted walk-through inspections of office, shop grounds, and storage areas to identify and make action plans to resolve potential safety hazard and housekeeping issues. Mosquito Control operations ceased in November and all personnel assigned to other duties within The Public Services Department for the winter season.

Events of FY 2010

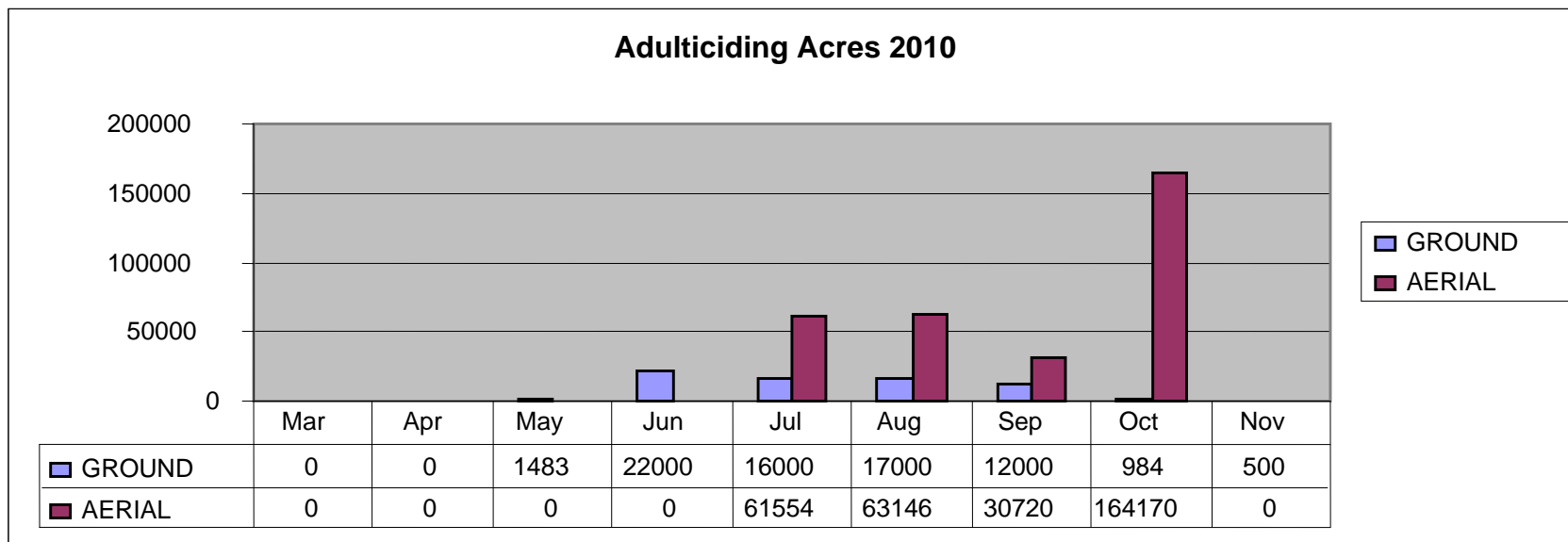
- Eric DeLuca and Jeremiah Stafford hired for position of Mosquito Control Technician, February.
- Tim Chatman and Herb Puckett traveled to Beaufort County Mosquito Control to view designs for proposed new mosquito control chemical building, February 11th.
- Tim Chatman participated in Ethics Training, February 17th.
- New Employees, Eric Deluca and Jeremiah Stafford @Mosquito Control March 1st.
- Tim Chatman participated in conducting droplet calibration of Williamsburg Air's aircraft with Adapco, April.
- All mosquito control employees attended the South Carolina mosquito Control Association's Summer Workshop in Pinopolus, South Carolina, June 11, 2010.
- Mosquito Control conducted a "Community Sweep" of the West End in observance of "National Mosquito Week", June 26, 2010.
- Mosquito Control employees attended a Hazardous Communication Training, Spill Control and Hazardous Materials Awareness training, June 29th.
- All Mosquito Control employees attended the South Carolina Mosquito Control Association's Annual Conference held in McCormick, South Carolina, November 3-5, 2010.
- Eric Deluca tested and passed examination for Non Commercial Pesticide Applicators license November 16, 2010.
- Jeremiah Stafford tested and passed the Non Commercial Pesticide Applicators Core examination, November
- Tim Chatman, Gary Davis and Herb Puckett, visited Savannah and Beaufort County Mosquito Control facilities for proposed plan designs for new mosquito control building in Georgetown.

COMPARISON RAIN DATA 2008, 2009 2010





- Georgetown County experienced an abnormal high tide during the month of July and October.



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I. TEMPORARY CONTROL OPERATIONS

A. Adulticiding

Adulticiding is the operation of spraying adult mosquitoes with insecticides. There are two methods of application used by Georgetown County. These methods are ground ULV (Ultra Low Volume) from truck mounted spray units and aerial ULV by a contracted aerial applicator.

Applications of adulticide are guided by light trap collections, (LTC) requests for service, and weather conditions. The area with the highest counts, collections, and requests are sprayed first (when weather is favorable). When infestations of mosquitoes are of such magnitude that the trucks can no longer maintain adequate control, aerial adulticiding is used.

In 2010, ground adulticide applications were made to a total of 92,667 acres. Aerial applications totaled 319,590 acres. This increase was greatly influenced by high levels of rain and abnormal high tides that occurred late September and early October. High temperatures in October contributed to multiple breeding of Psorophora (Flood pool) mosquitoes. Treatment totals were highest for the month of July, August and October.

B. Larviciding

Larviciding is using chemicals on the aquatic larval stage of the mosquito. Methods of application are from the ground or air. Ground use of larvacide is executed on a small scale in catch basins, ditches, temporary rain pools and small ponds that are known to produce mosquitoes. On a larger scale, aerial applications of larvacides are used in spoil areas (dredge disposal sites). Aerial Larviciding acres totaled: 2,738.5 acres in 2010.

I. PERMANENT CONTROL OPERATIONS

Permanent mosquito control is accomplished by drainage and filling. We work closely with the Drainage/Stormwater Section of our Department and Georgetown City's Storm Water Department to reduce drainage problems.

II. INSPECTION-SURVEY OPERATIONS

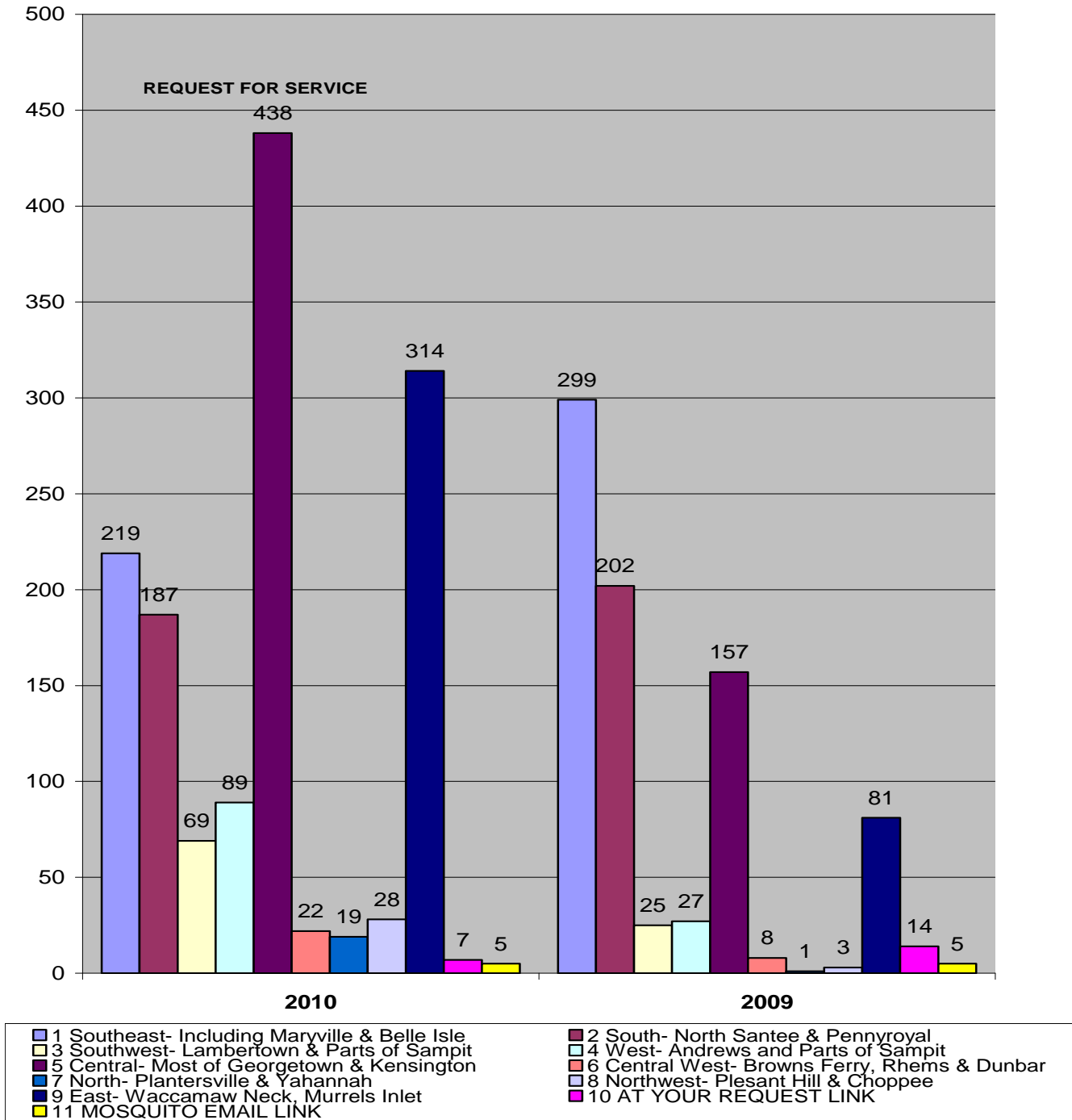
The primary purpose of the inspection-survey program is to identify and map the sites of mosquito producing and infestation areas so that proper treatment procedures can be employed. There are two types of programs employed under the inspection-survey operations.

A. Dredge Disposal Area Inspections

Inspections of this nature are strictly for detection of the immature stages of the mosquitoes, which develop in the cracks of the hydraulically-dredged sediment. These areas cause major mosquito problems in Georgetown County. Survey and control work that is done in these areas are reimbursed by the controlling agency.

B. Service Request Inspection

At times throughout the mosquito season we inspect property because residents call in and are concerned that they have mosquito breeding. Mosquito Control also has a calling system, which benefits the public if they find breeding around their property. Mosquito Control may find a potential problem source and the property owner gets advice on personal protection via the elimination of the problem. This program is very similar to back yard inspections.



II. EDUCATIONAL – PUBLIC RELATIONS

Presentation is given to various homeowner associations to educate the public on decreasing mosquito breeding sources. Mosquito Control participated in Environmental Day at McDonald Elementary School where over 120 second and third grade students were educated on how to eliminate mosquito breeding sites around the yard. Mosquito Control also participated in the Summer Program sponsored by Georgetown County Library Services. Mosquito Control utilizes the presence of the Environmental Education Center to educate the public on the reduction of breeding.

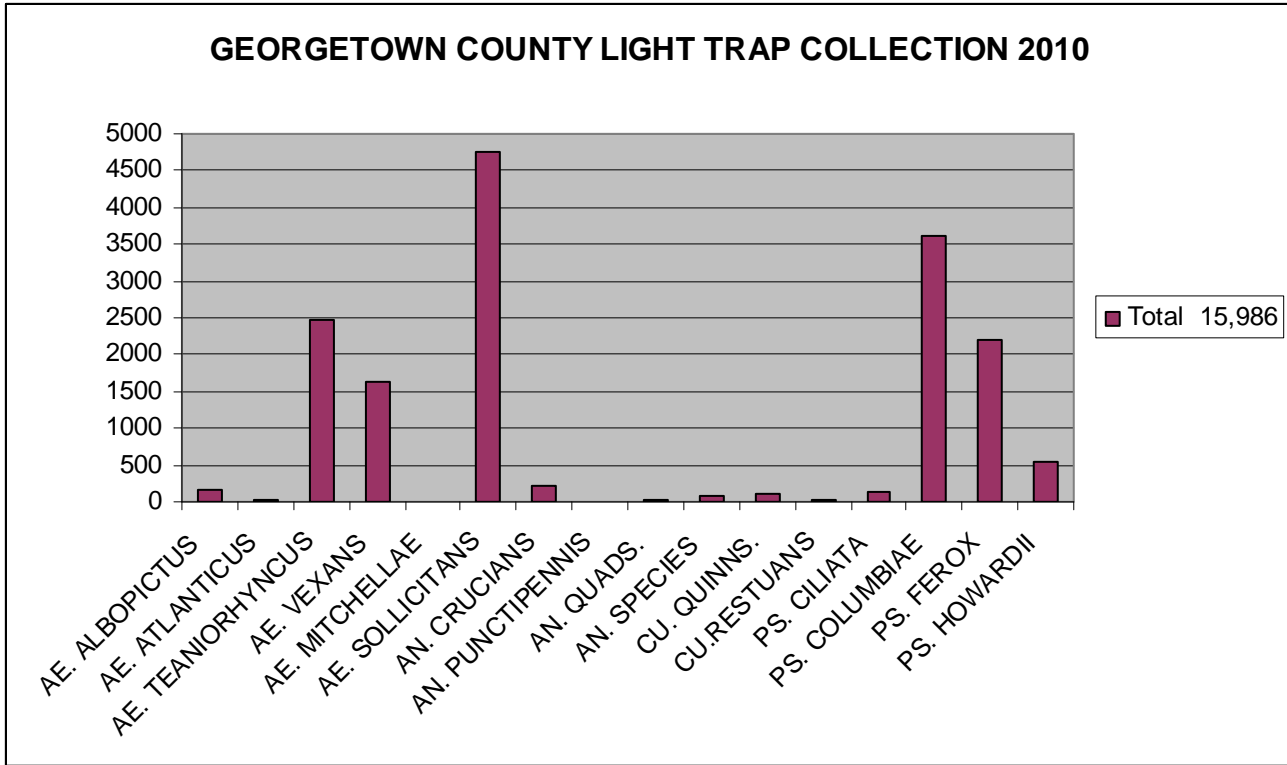
Georgetown County school students were taught the life cycle of a mosquito and different methods to reduce the mosquito population. Brochures on mosquito control for homeowners are distributed in various locations throughout the County. Advertising and press releases in local newspapers were also utilized.

III. LABORATORY OPERATIONS

Adults and immature stages (larvae) of mosquitoes that are collected in the field are brought in for identification and recording. Species knowledge is important because the habits and habitats of each mosquito are different and this helps us determine the best control procedures to use. Laboratory operations also are used for the calibration of our insecticide dispersing equipment to ensure that proper required amounts are employed in the environment.

Mosquito Identification totals for 2010:

<u>SPECIES</u>	<u>TOTAL ID</u>
AE. ALBOPICTUS	154
AE. ATLANTICUS	38
AE. TEANIORHYNCUS	2464
AE. VEXANS	1640
AE. MITCHELLAE	7
AE. SOLLICITANS	4754
AN. CRUCIANS	230
AN. PUNCTIPENNIS	6
AN. QUADS.	24
AN. SPECIES	83
CU. QUINNS.	111
CU.RESTUANS	15
PS. CILIATA	123
PS. COLUMBIAE	3606
PS. FEROX	2190
PS. HOWARDII	541
TOTAL	15986



V. SAFETY

Georgetown County Mosquito Control has made great strides in improving the safety of their operations. The chemical building is equipped with explosion proof lights and pumps. Proper Protective Equipment is worn during chemical mixing and when applications are performed. Mosquito control personnel also attends monthly safety training sessions at the Howard Auditorium and monthly toolbox talks are conducted at the Mosquito Control office. Each employee is tested annually for Cholinesterase inhibitors and medically evaluated for respirator use. Training is mandatory for all employees in this section.

Surveillance

In 2010, the Mosquito Control Division used several different tactics in performing independent inspections to monitor mosquito populations. Light traps were established in each control zone and were closely monitored throughout the season. Landing rates and larval dip inspections were performed in areas of suspected mosquito activity. Requests for service from the public allowed Mosquito Control personnel to more easily locate, inspect and treat for mosquitoes in high impact areas. Gravid traps were set in areas of known mosquito abundance to catch adults and test for the presence of arbovirus around the City of Georgetown.

<u>Month</u>	<u>Inspections</u>	<u>Type</u>	<u>Inspections</u>
April.....	7	Larva Dip.....	141
May.....	13	Light Trap.....	407
June.....	21	Landing Rate.....	538
July.....	35	Request for Service.....	1397
August.....	21		
September.....	8		

October.....	12
November.....	2

Larval Dip Surveillance

Larval dip surveillance was used to determine the presence and abundance of mosquito larvae and pupae. Inspectors used a standard mosquito dipper to inspect for larvae and suspected site locations. Once their presence was established, appropriate treatment applications were made so that emergence to the adult stage was managed. Peak counts were observed in July, August and October. These high counts were a result of average to above average rainfall amounts as well as abnormal high tides experienced across the region in 2010.

Landing Rate Surveillance

Landing rate counts are an important surveillance tool for monitoring adult mosquito activity. This adult population index is performed by disturbing vegetation in areas of suspected mosquito activity and counting the total number of mosquitoes landing on the inspector for one minute. The total count is recorded as the landing rate. Depending upon the species observed, site location and other temporal and environmental aspects of the inspection, landing rate counts between 3 and 5 adults per minute may induce adult control measures. As was the case for 2009, landing rate counts in 2010 were somewhat higher. Peak average counts were observed in July, August and October. This high activity was a result of high rain levels experienced from frequent occurrences of thunder storms and abnormal high tides during this period of the control season.

Service Request

Request for mosquito control service from the public continues to be an integral component of the unit’s surveillance and control efforts. These requests often provide valuable information, which is an asset in making mosquito control operational decision. Service request are normally followed with a site inspection by unit personnel however; due to the amount of calls received, we were unable to inspect each site. Attempts are made to identify the mosquito source at the site and, if necessary, implement control actions. In 2010, a total of 1,397 calls were logged by the mosquito control division. This is somewhat higher due to adult mosquito activity occurring during October.

Arbovirus Surveillance

In 2010, the Integrated Mosquito Management program contributed significant resources to the South Carolina department of Health and Environmental control’s (DHEC) arbovirus surveillance program. The following data was provided by Dr. Chris Evans, DHEC Research Department. Georgetown Mosquito Control personnel collected 691 mosquitoes using CDC Gravid Traps. This accounts for 5.45 percent of all mosquitoes submitted to DHEC offices in Columbia for testing. Through collection and surveillance efforts, no submitted samples of mosquitoes from the area tested positive for the presence of arbovirus.

Number of Mosquitoes Tested from Gravid Traps in Georgetown County in 2010.

TYPE OF TRAP		
Species Full Name	Gravid Trap	TOTAL
Aedes albopictus	38	38
Aedes vexans	1	1
Anopheles crucians complex	2	2
Coquillettidia perturbans	1	1
Culex erraticus	1	1
Culex pipiens complex	38	38
Culex restuans	3	3
Culex territans	2	2
Culiseta melanura	1	1
Ochlerotatus sollicitans	1	1
Ochlerotatus taeniorhynchus	6	6
TOTAL	94	94

Collection Dates and Numbers of Gravid Traps in Georgetown County in 2010.

First Date of Collection	Last Date of Collection	Number of Traps Set	Number of nights trap was run	Total Trap Nights
5/24/2010	5/27/2010	4	4	16
6/14/2010	6/17/2010	4	4	16
7/12/2010	7/15/2010	4	4	16
8/16/2010	8/19/2010	4	4	16
9/7/2010	9/9/2010	4	4	16
9/20/2010	9/22/2010	4	4	16

Goals and Objectives for FY 2011

Continued improvement in the areas of data collection, mosquito identification and Source reduction will enhance the effectiveness of our control efforts.

Educating the public of ways to reduce the mosquito population is another goal of Mosquito Control. Newspaper ads will be placed in local newspapers, and informational flyers will be placed throughout the County.

National Mosquito Control Awareness Week will be observed, June 19 – 25. Georgetown County Mosquito employees will set up educational booths at the Georgetown County Farmer's Market.

Training is an important aspect of Mosquito Control. Training courses have been scheduled in mosquito identification. A field identification session will be done in-house. Training in safety, surveillance, and inspections practices will be conducted throughout the season as well.

Construction of a new Mosquito Control Facility for Georgetown County will improve the effectiveness of our Integrated Pest Management Program. The new facility will contain all of the components of mosquito control in one location. This will improve the efficiency of our program.

The addition of a truck mounted ULV spray machine will greatly enhance our ability to provide timely service to all areas of the County. Mosquito control currently use three truck mounted ULV spray machines.