

R. Joe Simmons, Director

Annual Report

Information compiled and
edited by: Lisa Wagenbrenner

Revised by: Kirby R. Foley, Sr



Chesapeake Mosquito Control Commission

Annual Report

2010

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Mosquito Life Cycle illustration, page five, courtesy of America Mosquito Control Association (AMCA)

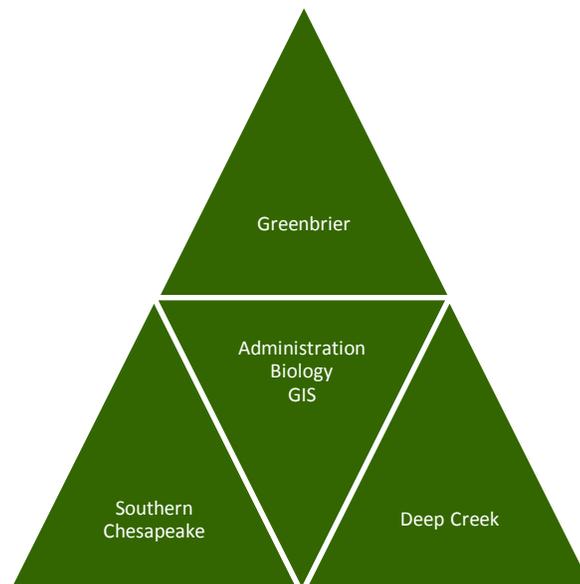
INTRODUCTION

The purpose of the Chesapeake Mosquito Control Commission is to conduct mosquito control activities in the City, as directed by the Director who is appointed by the Board of Commissioners.

Six of the Board members are volunteer residents appointed by the Chesapeake City Council; the seventh is a designee of the Virginia State Health Commissioner and serves as Commission Chair.

The goal of the Chesapeake Mosquito Control Commission is to reduce and control the mosquito populations using the safest and most effective means available. We use an integrated mosquito management (IMM) approach which is an ecologically based strategy that relies heavily on natural mortality factors and uses control tactics that disrupt the environment as little as possible. We use adulticides during periods of mosquito-borne disease transmission or when source reduction and larval control have failed or are not feasible. All control activities and decisions are based on surveillance.

The Commission is made up of three service districts: Deep Creek, Greenbrier, and Southern Chesapeake.



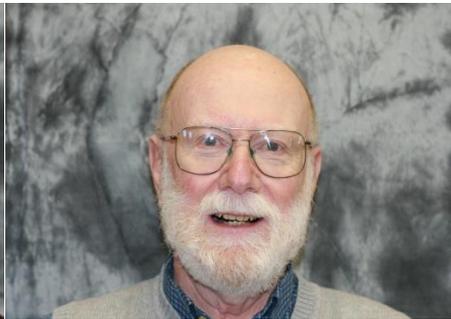
Commissioners



Nancy Welch MD, Chairperson



Joe Davis



William Hoddinott



Robert Mann



James Sawyer



Barry Thacker



Janie Tompkins

Commission Staff



R. Joe Simmons, Director

| Central Office Staff | Biology Department | Mechanics |
|--|----------------------------------|------------------------------|
| Kirby Foley, Operations Director | Lisa Wagenbrenner, Biologist | Johnny Tyndell, Mechanic II |
| Amy Pippin, Fiscal & Office Admin. | Connie Gregg, Biology Technician | Michale Powell, Mechanic |
| Janet Haley, HR & Safety Admin. | Tanya Hodges, Biology Technician | John Trotter, Mechanic Tech. |
| Jason Pevear, GIS Analyst | Casey Schailey, Biology Intern | |
| Christina Coup, Office Supp. & Payroll | Jessica Jewell, Biology Intern | |
| Deborah Vines, Office Specialist | | |
| Susan Freeman, Office Specialist | | |
| Roger Burnham, Custodian | | |

District Office Personnel

| Deep Creek | Greenbrier | Southern Chesapeake |
|------------------------------------|--------------------------------------|-----------------------------------|
| Allen Peoples, District Supervisor | Robert Whitaker, District Supervisor | Leroy Bohn, District Supervisor |
| Zollie Russell, Field Supervisor | Steve Lemnios, Field Supervisor | Steve McPherson, Field Supervisor |
| Shamsiddeen Ali, Applicator II | Mark Leary, Field Supervisor | Ronald Johnson, Senior Applicator |
| Patricia Scott, Applicator III | Jack Akers Jr., Field Tech. II | Darin Brown, Senior Applicator |
| Claudia Holly, Applicator I | Gary Harmon, Applicator II | Jerry George, Senior Applicator |
| Dennis Washington, Field Tech. II | Jacqueline Snowden, Applicator II | Pat Solomon, Applicator I |
| Derrick Adams, Field Supervisor | Scott Stevens, Senior Applicator | Shaun Cadwalader, Field Tech. |
| Martell White, Senior Applicator | John Cole, Applicator II | Winfred Cooper, Field Supervisor |
| Charles Darden, Applicator III | Tameka Smith, Applicator III | Richard Jones, Senior Applicator |
| Joseph Cato, Applicator III | | Chris Gautier, Applicator II |
| | | Fred Whitaker, Field Tech II |

Bit of History

The Chesapeake Mosquito Control Commission came into existence through the consolidation of the five separate Mosquito Control Commissions in 2003. The five prior individual commissions were Deep Creek, Great Bridge, South Norfolk, Washington Borough, and Western Branch Mosquito Control Commissions. The Deep Creek Commission was formed in 1948, Washington Borough Commission in 1952, and Western Branch Commission became official in January 1955. The Norfolk County Board of Supervisors started these three Commissions. Norfolk County became the City of Chesapeake in 1963. The Chesapeake City Council formed the Great Bridge and the South Norfolk Mosquito Control Commissions in the 1960s.

Mosquito Biology

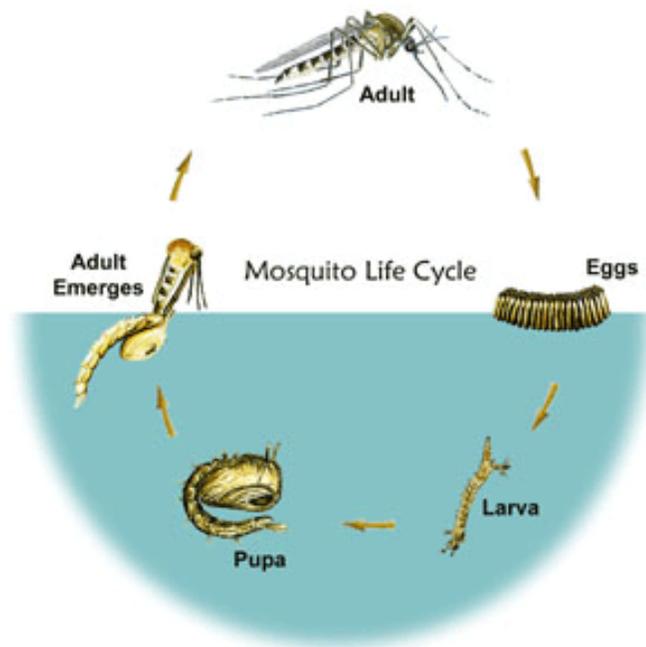
Mosquitoes are a part of the aquatic and the terrestrial food chains but are known more for their significance to man as pests, and especially as vectors of human and animal diseases.

A mosquito undergoes a complete metamorphosis by passing through four successive stages in its development: egg, larva, pupa and adult. Complete development can take as little as five days but normally takes ten to fourteen days depending on the species and environmental conditions. With the exception of the adult, all stages require water to complete development.

After breeding, the adult female requires a blood meal for the development of viable eggs. The male mosquitoes feed on plant nectar and do not take blood meals. The adult female of some species lay their eggs in masses or rafts on the water's surface. The other scenario involves mosquitoes that lay their eggs on moist soil or other substrates in areas that will be flooded with water later. After two days, these eggs are ready to hatch, but if not flooded, can withstand drying for months. Heavy rains and flooding can produce extremely huge mosquito populations in a short period of time.

The adult female of *Anopheles* and some *Culex* pass the winter in hibernation in protected places, whereas others over-winter in the egg or larval stage.

The flight habits of mosquitoes vary greatly with the different species. Some stay near their aquatic habitats, while others may wander a half, one, five or up to fifty miles.



IMPORTANCE OF MOSQUITO CONTROL

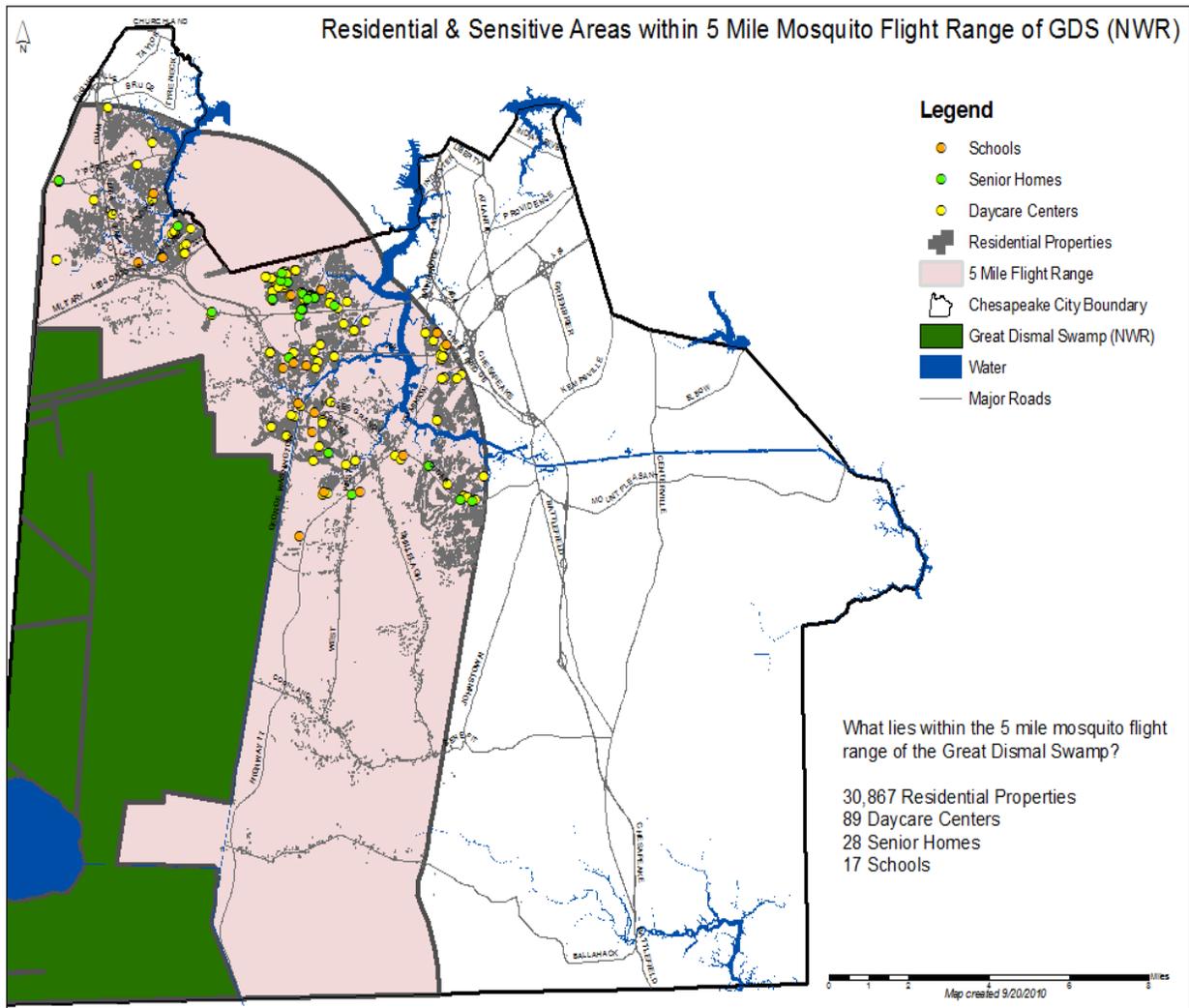
There are two main reasons why mosquito management is important. Many mosquitoes can transmit pathogens to man and animals, and mosquitoes can be a major annoyance.

Mosquito-borne diseases are among the world's leading causes of illness and death today. It is estimated by the World Health Organization that more than 300 million clinical cases each year are attributable to mosquito-borne illnesses. Malaria, dengue, encephalitis, yellow fever, filariasis, and heartworm are mosquito-borne diseases and are having devastating effects throughout the world. Most of these diseases have been endemic and/or caused epidemics in the United States in the past. Today, only the arboviral encephalitides occur annually and dengue occurs periodically in the U.S. The major types of viral encephalitis in the United States include St. Louis, LaCrosse, Eastern equine, Western Equine, and West Nile virus. These viruses are normally infections of birds or small mammals. During these infections, the level of the virus may increase in these infected animals facilitating transmission to humans by mosquitoes. Human cases of encephalitis may be mild to very severe illnesses and a few cases can be fatal. Dengue is a viral disease transmitted from person to person by mosquitoes. Most infections will cause mild illness but some can be severe and even cause death. Dengue is endemic in the Caribbean, Central and South America. Recently, Dengue has occurred with increasing frequency in Texas and Florida. Other pathogens transmitted by mosquitoes include a protozoan parasite, which causes Malaria, and *Dirofilaria immitis*. *Dirofilaria immitis* is a parasitic roundworm and that causes dog heartworm.

Mosquito-borne diseases also affect both wild and domestic animals. Unvaccinated horses and emus are highly susceptible to Eastern Equine Encephalitis; death rates may reach 90% once encephalitis is contracted. Horses, a few small mammals, and some birds are very susceptible to West Nile Virus. Dog Heartworm kills many domestic dogs each year. It is both preventable and treatable, although treatment is expensive and not always successful. The best option for dog owners is prevention.

The presence of mosquitoes can cause reductions in labor efficiency and depreciation of real estate values. They can also interfere with outdoor activities and recreation.

The Chesapeake Mosquito Control Commission practices integrated mosquito management principals by employing the following techniques: source reduction, public education, surveillance, biological controls, larviciding, and adulticiding. The proper philosophy of mosquito control is based on the fact that the greatest impact on mosquito populations will occur when they are concentrated, immobile and accessible. This emphasis focuses on habitat management and controlling the immature stages before the mosquitoes emerge as adults. This policy or practice reduces the need for adulticiding applications.



Map of the city pinpointing sensitive areas such as schools, daycares and senior living, within a five-mile buffer zone of the Great Dismal Swamp.

Integrated Mosquito Management Techniques

Public Education



Extensive efforts are made to inform and educate the public about potential diseases related to mosquitoes and methods of mosquito control. Resident education is very important in controlling mosquito populations. A well-informed and alert resident can be as effective as a weekly property inspection by mosquito control personnel.

Public service announcements and ads are placed on radio and in news publications. Some informative interviews with Commission personnel are conducted by news departments of local television stations.

Lisa Wagenbrenner, Connie Gregg and Tanya Hodges spearheaded our educational program this year. They worked fifteen elementary schools that have third grade classes conducting twenty-two presentations to 1,899 students. Career days were conducted at four elementary schools involving 1,000 more students. Leroy Bohn and Zollie Russell helped with the Career Day presentations.

The Biology Department also attended two science fairs, a Public Safety Day, the Izaak Walton Boy Scouts Day Camp and the Dunedin Park Spirit Day, reaching another 1,000 students and parents. Joe Simmons also did presentations for three area civic leagues.

Upon invitation, presentations are made to schools, clubs, or civic groups and are routinely made at the state and regional conferences. Our Biologist helps with the annual state recertification classes each year.

The Commission is listed on the City's public speakers list. Commission personnel are also very active in local, state, and regional training activities.



Lisa Wagenbrenner

Leroy Bohn

Both are engaging students in mosquito control operations during one of the schools career days.



Source Reduction

Effective mosquito control must include efforts to eliminate or reduce sources of mosquito breeding. We eliminate, empty, or treat artificial containers that can become mosquito habitats. Mosquitoes reproduce in impounded and standing water; therefore maintenance of drainage ditches is one of the Commission's primary concerns.

There was a reduction in ditch cleaning operations because we have reduced our personnel by 30% over the last two years due to budget constraints, and have had to extend our larviciding and adulticiding into the normal ditching time.

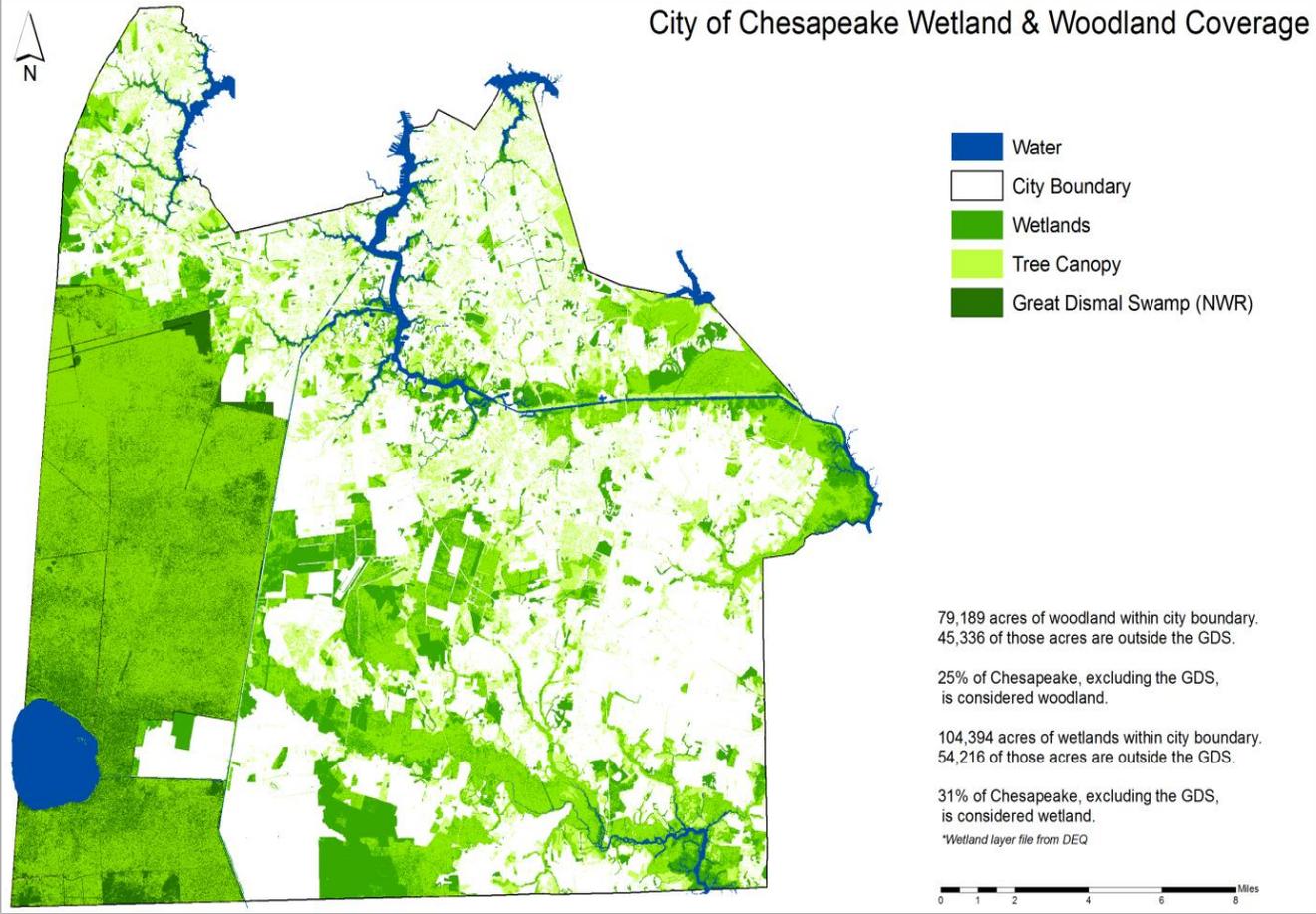
The following source reduction activities were completed in 2010:

| | Deep Creek | Greenbrier | Southern Ches. | Citywide Totals |
|-------------------|-------------|-------------|----------------|-----------------|
| Bush (weed-eater) | 6.9 Acres | 22.1 Acres | 29.1 Acres | 58.1 Acres |
| Cleaning | 18.1 Miles | 11.6 Miles | 28.4 Miles | 58.1 Miles |
| Grading | 6,236 Cft. | 3,772 Cft. | 0.0 | 10,008 Cft. |
| Refuse Removed | 15.9 Tons | 26.5 Tons | 26.5 Tons | 71.9 Tons |
| Total Man Hours | 3,992.0 Hrs | 4,030.0 Hrs | 4,693 Hrs | 13,115 Hrs |

Ditching Operations



The City of Chesapeake is unique in that it has over 104,000 acres of wetlands within its boundary and 25% of the City, excluding the Great Dismal Swamp, is considered woodland.



Surveillance

Although surveillance is a primary concern of the Biology Department, it is conducted by a combined effort of the larviciding crews, field supervisors and the biology personnel.

During the breeding season, surveillance programs are conducted so that control activities can be concentrated in those areas with the most serious problems. Surveillance is also done to determine if any virus activity is present in the mosquito population and in the sentinel chickens.

The surveillance techniques used are: larval dipping surveys, trapping with CO₂ baited traps, testing of mosquitoes, testing sentinel chicken serum, and service requests from the public.

CDC, Gravid, Rotary, and BG-Sentinel Traps

The Biology Department uses CDC, BG – Sentinel, Gravid and Rotary Traps to survey the adult mosquito populations in Chesapeake.

The carbon dioxide (CO₂) baited Centers for Disease Control, (CDC) light trap is the primary method used to capture adult mosquitoes. They are set for over-night collections of mosquitoes, which are then separated and speciated into pools for arboviral testing. We set at least forty of these traps each week throughout Chesapeake. CDC Light Traps utilize a battery powered light source to attract mosquitoes and are baited with CO₂, as an additional attractant. CMCC uses pressurized tanks, which emit regulated low levels of CO₂.

The BG-Sentinel is designed to use a special lure that contains lactic acid, ammonia and fatty acids like the human skin. We also use carbon dioxide as an attractant with the lure. We received and started using two BG – Sentinel Traps in mid August of 2006. We have set the BG-Sentinel and CDC Light Traps side by side over the last four years to determine which the better trap is. The BG-Sentinel Trap averaged collecting 485% more mosquitoes than the CDC Light Trap. The CDC Light Trap is more efficient in collecting the Anopheles and two of the Culex species. Due to this fact, we set the BG and CDC traps in combination to determine which species are involved when we have a problem area. The BG Trap is extremely more efficient than any other type trap for collecting adult mosquitoes. In fact, they are too efficient. If we used BG traps for all our trapping, we would have to triple our man hours just to identify and pool the samples.

The Gravid Trap is used to attract and capture gravid adult mosquitoes. The attractant used is an infusion of hay, grass clippings, chicken feces, yeast, and water that has been allowed to ferment. The primary target species are *Culex* and *Aedes albopictus*.

We set the Gravid Traps in areas that have the older sewage systems and have high numbers of the above species.

The Rotary Trap is used to survey the adult mosquitoes and their periods of activity. It allows us to trap eight, two-hour periods for a total of sixteen hours each night. We separate and speciate each two-hour period to determine which species were active at the determined hours. This information can be used to indicate the most effective hours to adulticide. The Rotary Trap also uses a light source and CO₂ as attractants for the mosquitoes.

The presence of CO₂ widens the array of mosquitoes that are attracted and allows these traps to be effectively set to collect mosquitoes that are active during both daylight and evening hours.

The mosquitoes are collected alive in the CDC, BG-Sentinel and Gravid traps by containing them in a net instead of a killing jar. Collecting the mosquitoes alive is necessary for viral detection.

Our biology personnel set 1,078 baited traps including sixty-eight that were set in the Great Dismal Swamp National Wildlife Refuge. A total of 147,632 mosquitoes were captured at ninety-one trap sites. The species known to be capable of transmitting Eastern Equine Encephalitis (EEE) and West Nile Virus (WNV) were tested at the Norfolk Department of Public Health Lab until late August when state budget cuts closed the facility. Due to the closing of the Norfolk lab, the Biology Department began in house testing using Vec Tests to detect WNV and EEE.

CMCC is a member of the Tidewater Regional Arboviral Surveillance Team (TRAST), a cooperative effort of the regional mosquito control agencies and the Norfolk Health Department laboratory, for the arboviral testing program. Even with the closing of the Norfolk lab, TRAST continues to be an active group.

Our 2010 season was a below average year for mosquito populations, trapped mosquitoes, and tested pools. We had seventeen confirmed disease incidents with one sentinel chicken positive for both WNV and EEE. This year was very similar to 2008 when we had only seven positives. Once again, we did not have any confirmed human cases and no horses or other livestock were positive in Chesapeake.

Examples of the Traps used for Adult Mosquito Capture



**CO₂ Baited CDC
Trap**



**BG-Sentinel
Trap**

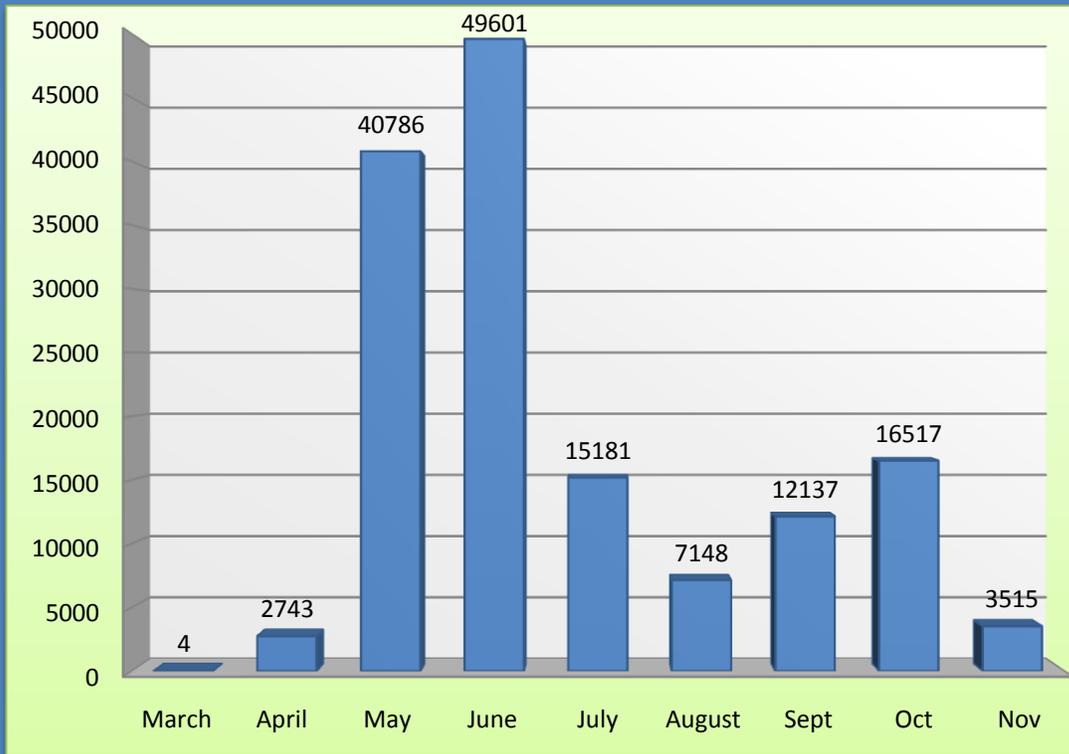
**Gravid
Trap**



MOSQUITOES TRAPPED IN CHESAPEAKE BY DISTRICT – 2010

| | Deep Creek | Greenbrier | GDS Refuge | Southern | City-Wide total | Percent of species |
|------------------------------|--------------|--------------|--------------|--------------|-----------------|--------------------|
| Number of Traps | 384 | 286 | 68 | 340 | 1078 | |
| % of Traps: | | | | | | |
| Males | 840 | 565 | 170 | 3588 | 5163 | 3.52% |
| <i>Ae. albopictus</i> | 510 | 1165 | 2 | 86 | 1763 | 1.20% |
| <i>Ae. vexans</i> | 4950 | 1797 | 1635 | 2175 | 10557 | 7.20% |
| <i>An. crucian</i> | 1479 | 5690 | 92 | 8691 | 15952 | 10.87% |
| <i>An. punctipennis</i> | 31 | 21 | 3 | 228 | 283 | 0.19% |
| <i>An. uadrimaculatus</i> | 71 | 99 | 1 | 1787 | 1958 | 1.33% |
| <i>Cq. perturbans</i> | 4759 | 2000 | 842 | 877 | 8478 | 5.78% |
| <i>Cs. inornata</i> | 3 | | | 1 | 4 | 0.00% |
| <i>Cs. melanura</i> | 23688 | 1694 | 30092 | 8488 | 63962 | 43.60% |
| <i>Cx. erraticus</i> | 462 | 250 | 85 | 509 | 1306 | 0.89% |
| <i>Cx. pipiens</i> | 117 | 154 | 1 | 22 | 294 | 0.20% |
| <i>Cx. restuans</i> | 90 | 186 | 5 | 69 | 350 | 0.24% |
| <i>Cx. salinarius</i> | 3395 | 9827 | 147 | 1811 | 15180 | 10.35% |
| <i>Cx. territans</i> | 16 | 2 | 2 | 7 | 27 | 0.02% |
| <i>Oc atlanticus</i> | 874 | 149 | 129 | 666 | 1818 | 1.24% |
| <i>Oc canadensis</i> | 6432 | 1044 | 4141 | 1215 | 12832 | 8.75% |
| <i>Oc cantator</i> | | 2 | 1 | 3 | 6 | 0.00% |
| <i>Oc hendersoni</i> | 5 | 3 | 3 | 3 | 14 | 0.01% |
| <i>Oc infirmatus</i> | 445 | 498 | 65 | 465 | 1473 | 1.00% |
| <i>Oc mitchellea</i> | 1 | | 1 | | 2 | 0.00% |
| <i>Oc sollicitans</i> | 35 | 3 | | 1 | 39 | 0.03% |
| <i>Oc sticticus</i> | 1 | | | | 1 | 0.00% |
| <i>Oc. taeniorhynchus</i> | 38 | 23 | | 2 | 63 | 0.04% |
| <i>Oc. triseriatus</i> | 73 | 30 | 68 | 86 | 257 | 0.18% |
| <i>Or signifera</i> | 2 | 2 | | 4 | 8 | 0.01% |
| <i>Ps. ciliate</i> | 40 | 11 | 3 | 12 | 66 | 0.04% |
| <i>Ps. columbiae</i> | 487 | 95 | 13 | 160 | 755 | 0.51% |
| <i>Ps. ferox</i> | 519 | 58 | 22 | 754 | 1353 | 0.92% |
| <i>Ps howardii</i> | 20 | 15 | 19 | 12 | 66 | 0.04% |
| <i>Ur. Sapphirina</i> | 373 | 38 | 283 | 1668 | 2362 | 1.61% |
| Mutilated | 191 | 83 | 24 | 26 | 324 | 0.22% |
| Total females | 48916 | 24856 | 37655 | 29802 | 141229 | 96.26% |
| Total mosquitoes | 49947 | 25504 | 37849 | 33416 | 146716 | 100% |
| Total % of Mosquitoes | 34% | 17% | 26% | 23% | 100% | |

Mosquitoes Trapped Per Month for 2010 Season



CHESAPEAKE WEATHER 2010

Jan.-March 2.68 rain averaged 1.6° warmer

| MONTH | Normal Rainfall | 2010 Rainfall | + or -- Difference | Normal Average Temp. | 2010 Season Temp. | + or -- Difference |
|---------|-----------------|---------------|--------------------|----------------------|-------------------|--------------------|
| April | 3.38 | 1.00 | 2.38 | 57.40° | 61.80° | 4.40° |
| May | 3.74 | 4.60 | 0.86 | 66.30° | 70.20° | 3.90° |
| June | 3.77 | 3.76 | 0.01 | 74.50° | 80.30° | 5.80° |
| July | 5.17 | 5.84 | 0.67 | 79.10° | 82.80° | 3.70° |
| August | 4.79 | 3.59 | 1.20 | 77.40° | 80.20° | 2.80° |
| Sept. | 4.06 | 12.16 | 8.10 | 72.10° | 75.10° | 3.00° |
| October | 3.47 | 2.68 | 0.79 | 61.10° | 63.90° | 2.80° |
| Totals: | 28.38 | 33.63 | 5.25 | 69.70° | 73.47° | 3.77° |

Sentinel Chickens



The purpose of the Sentinel Chicken Program is to get an early warning of an active presence of the West Nile virus and/or Eastern Equine Encephalitis virus.

Ten flocks of four chickens each were strategically placed throughout the City. The biology personnel drew blood samples from each chicken every two weeks. The Norfolk Health Department Lab tested this serum for EEE and WNV until late August, after which Division of Consolidated Laboratory Services (DCLS) in Richmond continued the testing. There were four conversions for EEE and two for WNV and one chicken tested positive for both diseases. Eight of our ten chicken sites had positives. The chickens have proven to be very effective and true sentinels for us during the past eleven years.



Connie and Jessica

Taking a Serum Sample
From a Chicken



2009 Service Request Data:

In 2010 we had 817 less service calls than we had in 2009.

| Type of Request | Deep Creek | Greenbrier | Southern Ches. | Citywide |
|------------------|------------|------------|----------------|-------------|
| Mosquitoes | 626 | 327 | 477 | 1430 |
| Drainage | 61 | 28 | 47 | 136 |
| Property Release | 4 | 2 | 8 | 14 |
| Special fogging | 151 | 53 | 91 | 295 |
| Standing water | 41 | 24 | 23 | 88 |
| Other | 17 | 15 | 13 | 45 |
| Total: | 900 | 449 | 659 | 2008 |

Larviciding

Larviciding is the act of controlling mosquito larvae and pupae in the water by the application of Bacillus thuringiensis israelensis (**Bti**), fish, or some chemical that will kill them. Larviciding is one of the most important activities of the Commission personnel during the breeding season.

Inspections performed throughout the City identify those areas where breeding occurs and when found an appropriate larvicide technique is employed according to the area and/or stage of breeding found.

We treated 12,831 acres by two aerial larvicide applications during April and June 2010 and larvicided 2,732 acres by hand, ATVs, and Roadside Jeeps.

2010 Larviciding Totals

| | Deep Creek | Greenbrier | Southern Ches. | Citywide | Aerial | Totals |
|-------------------------|------------|------------|----------------|----------|--------|--------|
| ACRES LARVICIDED | 939 | 652 | 1141 | 2,732 | 12,831 | 15,563 |
| MAN HOURS | 7,820 | 9,173 | 9,233 | 26,226 | 399 | 26,625 |

Larviciding Application Techniques



Application by Backpack Sprayer



Application by ATV



Application by Roadside Jeep

Adulticiding

During mosquito control season, it is impossible to find and larvicide all breeding sites. In addition, mosquitoes migrate into control areas from adjacent non-controlled areas. The Commission performs adulticiding on an as needed basis.

Adulticiding is the act of operating a machine to uniformly disperse small amounts of pesticide over a target area to control adult mosquitoes. This is accomplished utilizing various forms of ultra-low-volume (ULV) spraying equipment.

The City, excluding the Great Dismal Swamp Wildlife Refuge, is divided into some thirty truck routes and fifteen ATV routes. Additional adulticiding, special fog requests and individual yards are treated by ULV backpack or hand-held sprayers on an as needed basis.

In 2010 we only had five inches more rain than normal, which produced a below average mosquito population and below average number of disease incidents. Due to the low number of disease incidents and citizen complaints, we adulticided less in 2010. We adulticided 413,342 acres by hand held, ATV, or truck equipment. That is a 50% decrease in acreage and 60% decrease in man-hours over last year. A total of 2,723 man-hours were used in this effort. We did no aerial adulticiding.

2010 Adulticiding Totals

| | Deep Creek | Greenbrier | Southern Ches. | Citywide |
|-----------------------|------------|------------|----------------|----------|
| ACRES ADULTICIDING | 121,682 | 126,872 | 164,788 | 413,342 |
| MAN HOURS | 771.50 | 947.25 | 1,004.25 | 2,723 |

Adulticiding Application Techniques



Backpack Application



Hand Held Sprayer Application



Thermo Fogger Application



Application By Truck



Application By Aircraft



Application By ATV

BIOLOGICAL REVIEW

The Biology Department started the year by completing the Annual Report, refurbishing and/or replacing equipment and organizing for the season.

We conducted larval surveys during February, March and early April to determine when we should do an aerial larvicide application. From March 30 to April 5 2010, aerial operations were conducted and our contractor applied liquid *Bti* and liquid Altosid larvicides to 11,643 acres with excellent results. In June, another aerial operation was conducted and our contractor applied *Bti* granules and Altosid XRG to 1,188 acres to combat *Cq. perturbans* brood and several wooded pool mosquito species. No aerial adulticide application was needed or conducted in 2010.

We averaged setting thirty-five traps each week during the season. We set CDC, Gravid, and BG-Sentinel traps in the three operational districts and the Great Dismal Swamp National Wildlife Refuge. The CDC and BG-Sentinel traps are our most used and most effective. They really compliment each other because both are more effective in attracting and collecting different species. The Gravid traps are used to attract and collect gravid females and, hopefully, *Culex pippins* mosquitoes, which are the best test species for West Nile Virus.

We trapped and identified 146,716 mosquitoes during the season. We pooled 663 pools that were tested by the Norfolk Health Department (NHD) Lab for Eastern Equine Encephalitis and West Nile Virus and 227 pools were tested in house using the VEC test kits for EEE and WNV. We had two pools test positive for EEE and two pools test positive for WNV. Polymerase Chain Reaction (PCR) at the Norfolk Lab detected our positive pools.

Twenty blood serum samples were drawn each week from the sentinel chickens and delivered to the NHD Lab for testing through August 17, after which DCLS in Richmond continued our blood serum testing. Four of our chickens tested positive for EEE, eight for WNV, and one tested positive for both diseases. Eight out of our ten chicken locations were positive for EEE and/or WNV.

The weather for the season averaged about 1.6 degrees warmer and we had only 5.2 inches more rainfall than normal for April through October.

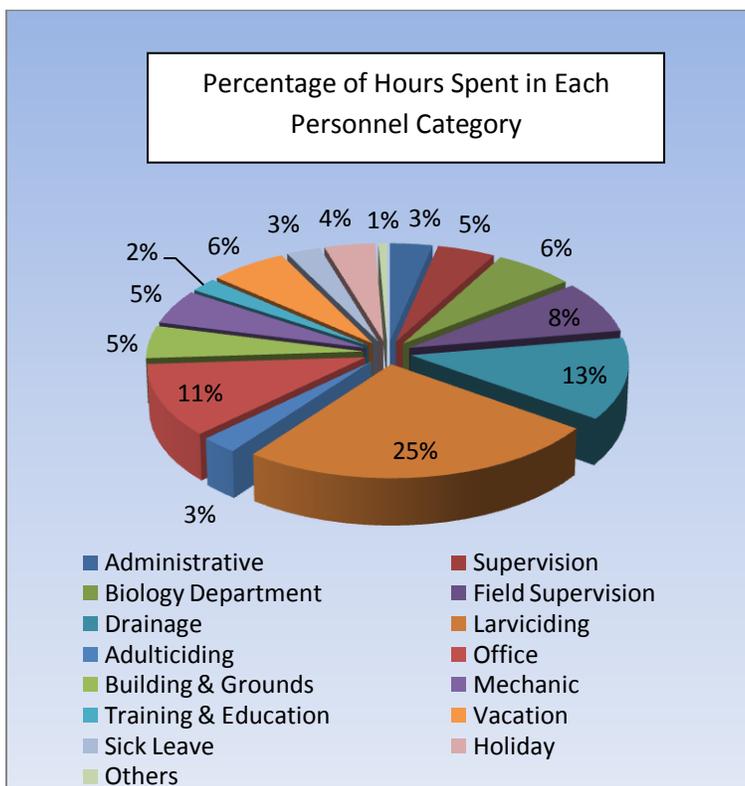
We had a low year for mosquito populations and for disease incidents; however, our WNV positives came much earlier than ever before. We had a total of seventeen positives four mosquito pools and thirteen chickens, but **no human cases**. Additionally, there were no positive domestic livestock.



The Biology Team Identifying and Pooling Mosquitoes

ADMINISTRATIVE REVIEW

| Personnel Category | Number of Hours |
|----------------------|-----------------|
| Administrative | 3543 |
| Supervision | 4844 |
| Biology Department | 6684 |
| Field Supervision | 8362 |
| Drainage | 13115 |
| Larviciding | 26625 |
| Adulticiding | 2723 |
| Office | 11705 |
| Building & Grounds | 5223 |
| Mechanic | 5534 |
| Training & Education | 2250 |
| Vacation | 6491 |
| Sick Leave | 2846 |
| Holiday | 4224 |
| Others | 710 |
| Total Hours: | 104,879 |



Statement of Revenue, Expenditures, and Changes in Fund Balance
 Chesapeake Mosquito Control Commission
 Year Ended June 30, 2010

| | Chesapeake Mosquito Control Commission |
|--|---|
| REVENUES | |
| Property taxes | \$ 3,921,025 |
| Investment income | 60,539 |
| Other | 65,126 |
| Total revenues | 4,046,690 |
| EXPENDITURES | |
| Other salaries and wages | 2,201,074 |
| Other fringe benefits | 810,915 |
| Other repairs and supplies | 798,431 |
| Insurance premiums | 278,994 |
| Capital outlay | 163,073 |
| Other | 374,103 |
| Total expenditures | 4,626,590 |
| Deficiency of revenues under expenditures | (579,900) |
| Fund balance - beginning | 6,026,986 |
| Fund balance - ending | \$ 5,447,086 |

Reconciliation to Change in Net Assets:

Governmental funds report capital outlay as expenditures. However, when reporting net assets, the cost of those assets is allocated over their estimated useful lives and reported as depreciation expense.

| | |
|---|---------------------|
| Deficiency of revenues under expenditures | \$ (579,900) |
| Depreciation expense | (246,242) |
| Loss on disposal | (7,763) |
| Capital outlay expenditures | 163,073 |
| Change in Net Assets | \$ (670,832) |

