

North Carolina
Mosquito and Vector Control
Association



[[Officers](#)] [[Constitution](#)] [[ManualofProcedures](#)] [[History](#)] [[Awards](#)]

- Home
- About Us
- Newsletter
- Training
- Sponsors
- Resources
- NPDES
- Conference
- NC Agencies
- WA Day
- Join Now
- Jobs
- Links
- Pics

History

A LIMITED HISTORY OF THE NORTH CAROLINA MOSQUITO & VECTOR CONTROL ASSOCIATION

2004

Prepared by Jim Bryan

North Carolina from time to time, since our first settlers, has seen the need to control mosquitoes. Early on, these tiny flying insects were thought to be just a significant nuisance. Later, with advances in science and medicine, people began to realize the significance of mosquitoes as a disease vector. For generations, colonies in North Carolina depended on agriculture. Almost every community had a water mill that ground wheat and corn locally raised. The mill ponds furnishing the power for these mills were ideal places for mosquito development. As a result malaria mosquitoes (*Anophelessp.*) were prevalent throughout the entire State. During World War I, the Army treated for mosquitoes in North Carolina where there were military personnel. These operations were primarily focused on malaria control. After World War I the US Public Health Service worked with local governments to establish limited malaria control programs in several towns in North Carolina. And, by the 1950's Yellow Fever, in the continental United States, was largely under control. The State Board of Health however, warned "*it is still necessary, however to maintain eternal vigilance....*" As the population of the State grew and people from the mountains to the coast invaded the mosquito's natural environment and as mosquitoes adapted to containers, etc. this produced additional need to control mosquitoes across the State. The private (Carolina Power and Light Company, Duke Power Company, Virginia Electric and Power Company) and governmental (Tennessee Valley Authority and the US Corps of Engineers) production of electricity using water additionally led to needed control around impoundments.

In 1936, North Carolina had 150 human malarial deaths. Then in 1948 for the first time in North Carolina recorded history there were zero human malarial deaths.

<u>Year</u>	<u>No. of Malaria Cases</u>	<u>No. of Malaria Deaths</u>
1948	147	0
1949	53	2
1950	36	1
1951	82	3
1952	305	3
1953	48	0
1954	38	0
1955	18	2

Malaria was made a reportable disease in 1937.

The North Carolina State Board of Health and local Veterinarians begin to recognize the need for better communications and reporting in the mid 1950's. Veterinarians first reported equine encephalitis in horses in 1955 and in that same year there were 13 coastal counties without a veterinarian. Only 43% of veterinarians participated or actively reported veterinary diseases by 1955. The State Board of Health made arrangements in 1956 for the collection of adult mosquitoes and their subsequent examination for virus isolates, when equine encephalitis had been reported by veterinarians.

Stimulated by hurricanes Hazel, Corrine, Diane and Ione the General Assembly passed legislation which led to the formation of the "Salt Marsh Study Commission" in 1955-56. In 1957 the Salt Marsh Mosquito Study Commission in compliance with Chapter 1197 of the 1955 Session Laws submitted a comprehensive report to Governor Luther H. Hodges and the General Assembly. The Commission members included Mr. Charles M. White as Chairman of NC State Board of Health, Dr. W. W. Johnston of Manteo, Charles J. McCotter of Bayboro, Edward G. McKinley of Morehead City, Dr. C. B. Davis of Wilmington, Phillip A. Griffiths, Vice Chairman, of the NC Department of Conservation and Development, and Yates M. Barber, Jr., of the NC Wildlife Resources Commission. Ms. HenreEtta Owen of the Insect and Rodent Control Section, NC State Board of Health acted as Secretary for the Commission. The primary purpose of the commission, "in accordance with the legislative act responsible for its creation, was to make a study of the salt marsh mosquito problem in Eastern North Carolina, and investigate the capacity of each community in the affected area to provide funds for mosquito control." Fifteen thousand dollars was provided to initially fund this study and report. The final report cost \$32,886. The State Board of Health and the United States Public Health Service are credited in the Commission's report for their cooperation and assistance in completing the study. The Commission's report further indicates the limited knowledge and experience available regarding salt marsh mosquito ecology and habits. The Commission stated, "salt marsh and other species of mosquitoes are a menace to the health of people who live in the parts of North Carolina in which these insects breed in large numbers. Human cases of malaria still occur in the State, and encephalitis, another mosquito-borne disease, was widespread in Eastern North Carolina during 1955. Cases occurred in humans, equine animals and domestic pheasants. An estimated 500 horses and mules were killed during this outbreak." The study pointed out the present and growing resistance of mosquitoes to DDT and other chlorinated hydrocarbons and expressed a great need for research in effective and economical control techniques. They emphasized that operations and planning should continue year round, implying that some control efforts were unplanned, spotty and ineffective. The Commission's report indicated some counties could support a mosquito control program if they received financial help on a "fifty-fifty basis from outside sources". Other counties due to low tax basis couldn't afford any mosquito control without significant assistance. The Commission was obviously concerned that State financial assistance would be limited to coastal counties with salt marsh mosquito problems and pointed out that several inland counties were bothered by fresh water mosquito species that originate within their borders. They stressed the need for the collection of data sufficient enough to determine adequate control measures. They estimated that it would cost \$8.33 million in 1957 dollars to control mosquito breeding in the 416,614

acres of salt marshes in North Carolina with drainage, filling and dyking. District formation was encouraged "in order for localities to be empowered to effectively organize....levy taxes, employ personnel, enter into contracts...." etc. At this time, districts were not provided for in our General Statutes. Adulciding and ditching efforts were generally the preferred control measures recommended by the Commission but encouraged the development of more effective and cheaper control methods. The Commission recognized the limitation(s) of adulciding as a mosquito control program. They emphasized the need for completely balanced mosquito control activities in North Carolina. Today we might call this the need for "integrated public health pest management".

In May of 1956 North Carolina Governor Luther H. Hodges applied to the Federal Civil Defense Administration for \$500,000 regarding the effect of recent hurricanes on mosquito production. The US Public Health Service coordinated the study to validate that a potential public health hazard existed. Their recommendations were to reduce the number of mosquito vectors and set up a minimum budget of \$500,000 to intensify larval and adult mosquito control along the entire coastal area and arrange for hurricane drainage systems. In 1956 17 counties and 15 cities/towns initially were allocated funds by the Federal Civil Defense Administration for coastal mosquito control. Later that same year, 12 additional governmental bodies received some funding for mosquito control efforts.

The Salt Marsh Study Commission stated in their 1957 report that the "eradication or extensive reduction of mosquitoes would do more to hasten the economic development of Eastern North Carolina than any other one thing". The Salt Marsh Study Commission illuminated the need of an advocate for mosquito control.

Historically, mosquito control was provided in Eastern North Carolina due to the negative effect salt marsh mosquitoes had on economic progress, agriculture, tourism, industry and real estate development. Mosquito control in the Piedmont and Mountains of North Carolina was not thought to be as great a problem when compared to coastal counties. In effect, until the formation of the North Carolina Mosquito Control Association and due to the size of the

state, poor regional communication in essence isolated mosquito problems and hampered the recognition of statewide mosquito control efforts. In the late 1950's and early 1960's communities generally provided their own limited control of mosquitoes.

North Carolina's professional mosquito control association most likely had its beginnings at the annual American Mosquito Control Association (AMCA) meeting in Boston, Massachusetts, when in the early 1960's Sid Usry with N. C. State Board of Health, Charlie and Frances McCotter of Bayboro, North Carolina, and William F. "Bill" Strickhouser of Charlotte, North Carolina, met in Mr. Usry's hotel room. Mr. Bill Strickhouser states "we began to discuss the need for a North Carolina Mosquito Control Association at this meeting". The vision formed at the AMCA meeting as these folks observed the collaboration and exchange of information among mosquito control professionals from all over the world. As would be expected, it took a few years to get organized and to get advice from those who already had similar organizations. So, with the help of Roland Dorer of the Virginia Mosquito Control Association, Sid Usry, Charlie McCotter, Heath Howie and Dewey Boseman promoted and organized the first meeting of mosquito control professionals to be held in Atlantic Beach, North Carolina at the Oceanna Motel. This meeting was sponsored by the North Carolina State Board of Health with assistance from the US Public Health Service, Communicable Disease Center. The purpose of this meeting was to form the North Carolina Mosquito Control Association (NCMCA). There were 42 original North Carolina members (see appendix for list of original members), with each region of the State represented, including representation from the: State Board of Health, North Carolina Wildlife Commission, Duke Power Company, and various city-county public works and public health agencies. Two attending the first NCMCA meeting were from the great State of Virginia, Mr. Roland Dorer and Mr. C.M. Pitts. The first meeting lasted five days in May of 1965 and for years the meeting was held in the spring of the year. Mr. Charlie White, Chief of Insect and Rodent Control, North Carolina State Board of Health, initially presided over the first meeting. On the first day, Charlie McCotter of Bayboro, North Carolina was elected President of the NCMCA and on that first night (May 10, 1965), an executive committee of six developed the Association's first Constitution which was unanimously adopted. The Association operated from donations and assessments with no membership fees initially. From a notation made by Sid Usry in 1965, "the Association has \$58.00 in the treasury". The first meeting included talks and presentations on "Survey Techniques", "Larviciding", "Adulticiding", "Life Cycle of the Mosquito", "Mosquito Biology and Important Mosquitoes of North Carolina" by Mr. Harry B. Weinburgh with the United States Communicable Disease Center followed by "Wildlife Management and Mosquito Control" by Mr. Otto Florshutz with the NC Wildlife Resources Commission. There were several panel discussions on fresh and salt water mosquito species with a visit to the salt marsh on May 13, 1965. They concluded the meeting with discussions for organizing local mosquito control programs and Weinburgh gave a quiz from the CDC materials he had presented earlier.

During the first year of the newly formed North Carolina Mosquito Control Association, Charlie McCotter and Sid Usry promoted the Association all across North Carolina. Both were prolific letter writers; encouraging local, state, federal, military and others to become part of the Association or to support the Association.

By June of 1966, the NCMCA had grown to 70 members with additions coming from chemical suppliers, the Communicable Disease Center, the United States Navy, the United States Public Health Service and other local public health and public works agencies. The NCMCA also agreed to collect one dollar annually at registration as dues to support the Association. Charlie McCotter became past president and handed off the reigns to Mr. Dewey Boseman in 1966. Mecklenburg County Health Department reported to the newly installed president of the Association serious problems with tires as breeding habitat for mosquitoes. And, the original news letter was entitled "SWAT-EM". Its first issue was probably in the 1966-67 Association year with Mr. Don Ashton as its first editor. SWAT-EM would be published quarterly for the benefit of its members.

In 1967, North Carolina and Virginia Mosquito Control Associations met in Nags Head, North Carolina for a joint conference. Topics at the meeting included: Aedes aegypti Eradication Program, Permanent Control Design and *Abate* the Promising Mosquito Larvicide. There were 51 in attendance at this meeting with buffet cost of \$4.00 per person and room rates at \$18.00 for a double and \$13.00 for a single.

At the Annual meeting in 1969, such notables as Dr. Kenneth L. Knight, head of the Department of Entomology, NC State University and Dr. Jacob "Jake" Koomen, State Health Director, would speak on "Mosquitoes and Mosquito Control in North Carolina" and the "State Board of Health Viewpoint on Mosquito Control in North Carolina" respectively. Both of these men continued to positively influence and support mosquito control in North Carolina throughout their careers. North Carolina State University and the State Health Director's Office have since this time made available time and resources to support the understanding of mosquito control in North Carolina and the Association. Captain United States Navy, John M. Hirst, in a July 1969 letter to Don Ashton indicated that he was finding more Anopheles quadrimaculatus species. Captain Hirst regularly asked the Insect and Rodent Control Section of the State Board of Health for assistance at the Naval Medical Field Research Laboratory.

In the late 1960's and early 1970's chemical companies began to sponsor events at the annual meetings. The first of these companies were Dow Chemical and American Cyanamid.

In February of 1970 Keith Oates and Dewey Boseman were presented commendations from the United States Navy for outstanding work in the survey and reduction of mosquitoes and gnats "bringing significant financial savings as well as environmental improvements" to Camp Lejeune (reported February, 1970 in the Jacksonville, NC *Daily News*. You could purchase six issues of the *Daily News* in 1970 for \$.50)

During the mid 1970's and early 1980's, manufacturers were developing better products for use as larvicides. Larviciding oils were readily available such as "FLIT-MLO" produced by the Exxon Oil Company. Then in 1977, the discovery of Bacillus thurengensis israelensis (Bti) from soil samples along pond and stream banks launched a new era of larviciding. Sometime in the mid 1970's the annual meeting dates changed from spring to fall, with at least one meeting as late in spring as June 30, 1976. Since 1979, the annual meeting has been in the fall sometimes meeting in September but most often in October and November. The TIFA fogging machines are still in use but "ultra low volume" adulticiding machines are rapidly moving to the forefront. ULV workshops are soon to become a part of annual training to insure droplet size consistently complies with the product label and federal laws. Dr. Richard C. Axtell of NC State University presented to the NC Mosquito Control Association at the September 23-25, 1981 meeting in Charlotte, NC "Microbial Mosquito Control". He spoke of the use of Bti (serotype H-14), Lagenidium giganteum, Culicinomyces clavosporus and Coelomycesspp. in mosquito control. Other microbial developments followed and "monomolecular oils" soon replaced their predecessors like FLIT-MLO. During the business part of the meeting in 1981, the North Carolina Mosquito Control Association voted to change the Association name to North Carolina Mosquito and Vector Control Association. Largely the reason for this change was due to the makeup of the Association at the time. Several agencies were not only working with mosquitoes but with the control of rats, ticks, fleas, fire ants, various biting flies, gnats, midges, bats, cockroaches, etc.

In 1982, the State reported that there were 3 human cases of Eastern Equine Encephalitis (EEE). These were the first to occur in approximately 20 years. The threat of disease often prompts legislative action. The Association directed its Officers to aggressively solicit the support of the NC Legislature in the next legislative session for more funding of vector control programs. Dr. Charles Apperson reported keeping membership information in a computer data base. At that time, the list contained 95 members. Dues were still a bargain at \$3.00 per year. Mailing labels now are easily printed for mass mailings to the membership and cost of a room at the annual meeting in Raleigh, NC was \$35.00 for a single and \$43.00 for a double, plus tax. The cost of a banquet ticket was \$10.25. In April of 1982 the NCMVCA applied for and received from the Internal Revenue Service an employee identification number (58-1468171). The Association also applied for tax exempt status under 501 (c) 3 of the Federal Internal Revenue Service Code. The North Carolina Department of Revenue also gave the Association tax exempt status on March 29, 1982 under Section 105-125 and 105-130.11 as a bona fide non profit, educational organization. The Association was incorporated on March 2cd, 1982 under the leadership of Don Willard, President, Bob Barden, Vice President, and Dr. Charles Apperson as Secretary/Treasurer.

About 1982 -1983 New Jersey, Delaware, Maryland mosquito control and US Fish and Wildlife were invited to North Carolina by Nolan Newton, Public Health Pest Management Section, for their expertise in "open marsh water management" projects. These mosquito control programs provided guidance in best management practices which led to open marsh water management pilot projects in both Pamlico and Onslow Counties. Dr. Alice Anderson came to North Carolina Public Health Pest Management shortly thereafter and was the principal manager of these and other open marsh water management projects. These projects, to date, continue to be viewed as successful projects; however, additional funding from the legislature has not been forthcoming to expand these concepts in other open marsh areas of the State.

In 1983, the Legislature is asked to support funding of vector control programs and Nolan Newton appeals to the Communicable Disease Center (CDC) to maintain adequate training at "The Wedge". Dr. Mac Tidwell with CDC is invited to make a presentation at our annual meeting on available training at "The Wedge". Thurman Tyson with the City of Rocky Mount, NC and Secretary/Treasurer of the Association actively solicits new members with more than 70 letters sent to prospective new members. In October 1983, Dr. Charles Apperson of NC State University, Mr. Jerry Perkins and Mr. Nolan Newton both of the Vector Control Branch, Division of Health Services, and Department of Human Resources were given special thanks by the Association for their work on the newsletter. Dr. Martin Hines, State Public Health Veterinarian, one of the Associations early (1966) members was recognized. Dr. Hines would soon be retiring from service in Public Health. Dr. Charles Apperson requested the Association evaluate the need for a professional educational display. The display should be suitable for mailing and promoting the organization in the

which were at professional meetings and local and state fairs. The Association moved to approve the purchase of a

exhibit space at professional meetings and local and state fairs. The Association moved to approve the purchase of a professional display and that the Executive Committee to have oversight of the production and purchase of the display. The Association received the educational display in 1984.

At the annual meeting in October 1984 the By Laws Committee is asked to consider Lifetime and Honorary Memberships. The Association was also asked to consider a joint meeting with the American Mosquito Control Association in 1988 in Charlotte, North Carolina.

Prior to 1985 the NCMVCA had no recognized way in which to recognize the meritorious and outstanding work of its members in the field of mosquito and vector control. The Association decided to set up and name an award in honor of one of its former members. A committee made up of George Swearingen of Duke Power Company, Dewey Boseman with Public Health Pest Management and Al Harris with the Craven County Health Department made up the committee. They brought a recommendation that the award be named after Dr. Hamilton W. Stevens. Dr. Stevens was a past president of the Association and a tireless advocate for mosquito control and public health. The committee, all past presidents, friends and acquaintances of Dr. Stevens developed the written proclamation which honored this man and the future recipients of the award. Dr. Nolan Newton, Section Chief, Public Health Pest Management Section would be the first recipient of the award in 1986.

Shortly after providing valuable insight and assistance in the development of the Hamilton W. Stevens award Al Harris retired in 1987 as Director of the Craven County Environmental Health Section of the local Health Department. "Al" served his county and public health for 32 years and was one of the first members of the North Carolina Mosquito Control Association.

North Carolina's Legislative Research Commission studying used tires and waste oil in November of 1986 ask Michael Rhodes and Bobby Waters (both of New Hanover County Health Department and current and past presidents of the NCMVCA respectively) for information regarding mosquito production in used/scrap tires. Their comments express concern for public health and the need to control the proper storage of used and scrap tires in North Carolina. The North Carolina Mosquito and Vector Control Association and the North Carolina Public Health Association collaborate in February of 1987 and put forth resolutions to the North Carolina Legislature regarding used and/or scrap tires and mosquito production.

Dr. Charles Apperson volunteers to act as Editor of the Association newsletter at the annual meeting in 1986. Not enough can be said at this time to honor the contributions Dr. Charles Apperson and North Carolina State University have made to and for the benefit of the North Carolina Mosquito and Vector Control Association. Since the mid 1980's Dr. Apperson has regularly provided leadership in the Association giving guidance in speaker selection, pesticide safety training and presentations to numerous to mention regarding cutting edge research and studies on various vectors of public health importance.

Rowland Dorer dies on February 19, 1987 at the annual Mid Atlantic Meeting. "Rollie" was the first president of the Mid Atlantic Mosquito Control Association, past president of both the Virginia and the American Mosquito Control Associations and was instrumental in the formation of the North Carolina Mosquito Control Association in 1965. Rowland and others would get together, meeting often, in Dare County providing tremendous leadership and guidance in the foundational structure by which we operate today as an Association. The North Carolina Mosquito Control Association remembers Rowland fondly and sent condolences to his family, colleagues and friends.

In 1987, the "Asian Tiger", *Aedes albopictus*, mosquito is collected in four North Carolina counties: New Hanover, Mecklenburg, Rockingham, and Stokes Counties. New Hanover reported the most extensive infestation from Fort Fisher to Wilmington. *Aedes albopictus* was found at Carolina Beach, by Bobby Waters, Vector Control Director, New Hanover County Health Department; by Dr. Barry Engber, Public Health Pest Management, in Rockingham and Stokes counties. The North Carolina Mosquito and Vector Control Association consequently are urged by the American Mosquito Control Association to pass a resolution asking the Communicable Disease Center (CDC) to do more in fighting the influx and spread of *Aedes albopictus*. The need to properly identify mosquitoes found in North Carolina prompt Drs. Barry Engber and Charles Apperson to offer one on one training in mosquito identification using taxonomic keys. Drs. Slaff, Apperson and others collaborate and develop "A Key to the Mosquitoes of North Carolina and the Mid-Atlantic States". The key was published in 1989. And, Dr. Rick Siegel, with CDC, states that North Carolina has had 54 cases of Lyme disease between 1984 and 1986. He reports the occurrence of the disease does not match the geographic distribution of any tick species of North Carolina.

On January 28, 1988 the North Carolina Mosquito and Vector Control Association sends letter of intent to the North Carolina Public Health Association (NCPHA) governing board and drafted by-laws for the creation of a Vector Control Section to NCPHA. This was done to utilize NCPHA's legislative clout to improve funding and educational

Control Section to NCMVCA. This was done to utilize NCMVCA's legislative clout to improve funding and educational opportunity(s) for NCMVCA.

Dr. Mark Slaff comes to North Carolina working as medical entomologist in the Western Regional Office in 1988. Dr. Mark Slaff and Mr. Parker Whitt confirm Aedes albopictus at a tire recapping center shortly after Slaff's arrival to North Carolina in Forsyth County. EPA in 1988 restated and tightened limitations on pesticide use to protect endangered species. North Carolina's State funding for mosquito control continues to shrink. A single mosquito control district, Chatham County Mosquito Control District in Georgia, has twice the budgeted appropriation as the entire State of North Carolina. North Carolina Public Health Pest Management encourages the local programs to consider districting. Rocky Mountain Spotted Fever (RMSF) continues to be a growing concern for North Carolina. There is actually more tick-borne disease reported in North Carolina than mosquito-borne. The North Carolina Mosquito Control Association sets up the Associational exhibit at the State Fair, on October 14-23, 1988 in the educational building. And the By-laws of the Association are amended to facilitate the alliance with the NC Public Health Association.

Passage of Senate Bill 111 in 1989 rewrites the solid waste management laws and defines comprehensive solid waste management plans for the State of North Carolina. With the inclusion of the North Carolina Scrap Tire Act, these laws will have a positive/reducing affect on mosquito control efforts with the cleanup of nuisance tire dumps and other illegal solid waste disposal activities.

Mitchell Parker, recipient of the N.C. Hamilton Stevens Award in 1991 and Mosquito Control Director for Onslow County leaves to take a fire inspectors position with local government. Mitchell was very innovative and active in open marsh water management projects in Onslow County. On November 6, 1992 by majority vote of the membership, at the annual meeting, the North Carolina Mosquito and Vector Control Association became a sustaining member of the American Mosquito Control Association. The Center for Disease Control begins surveillance for Lyme Disease in 1982 and reports that from 1982-1992 there were nearly 50,000 cases of Lyme Disease reported nationally.

The president of the North Carolina Mosquito Control Association, Dr. Alice Anderson, in 1993 declares this to be the year of "Open Marsh Water Management" (OMWM). And, unfortunately for public health pest management and our association Dr. Marc Slaff after five years on the coast of North Carolina as mosquito entomologist returned to New Jersey to become Director of Mosquito Control for Morris County.

Throughout the life of the North Carolina Mosquito and Vector Control Association we have been blessed with tremendous support and innovation from the industrial suppliers. Although some have been with several manufacturers, several names need to be mentioned that have served us well especially in the last thirty years: Mr. William F. "Bill" Strickhouser, Mr. Bill Jany, Larry Erickson, Don and Kelly Steed, Peter Connelly, Bill Zawicki, Ken Walcher, Larry Case, John Cohen, Joe Strickhouser and Jeffrey O'Neil. Along with these names we need to remember companies/manufacturers like: American Cyanimid, Clarke Mosquito Control Products, Coastal Vector Control, Northeast Vector Management, Lowndes Engineering, Summit Chemical Company, W. F. Strickhouser Company, Zoecon, etc. These folks and companies have been there when we needed supplies, speakers, sponsors and other support and we owe them a great deal of thanks.

A new guy shows up at the 1993 annual meeting named Dr. Bruce Harrison. He's rather unknown to most of us at the time but throughout the remainder of the 90's Dr. Harrison with purpose ushers in a renewed focus on mosquito identification, surveillance and control. Bruce with the assistance of the N. C. Mosquito and Vector Control Association and Public Health Pest Management Section, raise taxonomy and arboviral surveillance to new heights. Dr. Harrison's energy and enthusiasm in these areas of science incite and compel the mosquito control operators and managers to greater proficiency. Ultimately his endeavors in training give the mosquito control specialist our most powerful tools: knowledge and confidence. With these tools we can do better and work smarter, not necessarily harder.

On October 22, 1993, after a name the newsletter contest, sponsored by the Association Executive Committee, the Newsletter gets a new name, "The Biting Times". The Constitution and By-Laws are amended again in 1993 and the American Mosquito Control Association gives four complimentary journals, plus a subscription to "Systemics" for our Public Health Pest Management Office and permission to use the AMCA logo on our letterhead.

We fondly remember Mr. Don Ashton who died April 12, 1993. Don was retired medical entomologist of 40 years. He retired from the Vector Control Branch of the N. C. Division of Health Services. Don was a Charter member of the Association, our first newsletter editor and a principle leader in the formation of the Association.

On January 20, 1994 the NCMVCA give four one year memberships to AMCA to local programs. These four

memberships are given to NCMVCA for being a sustaining member. The local programs benefiting from these memberships in 1994 are: Carteret County, Beulaville, Sharpsburg and Dare County. NCPHA notifies the NCMVCA Executive Committee that the North Carolina Vector Control Section of NCPHA is in danger of losing its Section status due to low membership. Support for the Vector Control Section eventually wanes to a point that it loses Section status by 1997.

The NCMVCA, in 1997, offers to jointly sponsor the Second International Congress of Vector Ecology when it meets in Raleigh. Eventually, the Mid Atlantic Mosquito Control Association (MAMCA), the NC Vector Control Section of NCPHA, the School of Public Health at UNC Chapel Hill and the NCMVCA sponsor the meeting.

Throughout the 1990's the Public Health Pest Management Section repeatedly tell Local Programs that the General Assembly was not able to fund State Aide to Counties for Mosquito Control at appropriate levels. In fact, funding cuts were so deep that Public Health Pest Management Staff were hindered in their travel to local programs. Not until 1996 and 1999 when Hurricanes Fran and Floyd produced significant public health pest management concerns did some relief occur. And, arguably the most significant event occurred when West Nile Virus presented itself in New York City, New York in 1999. Seven people die in New York with 66 hospitalized. North Carolina and the rest of the United States anxiously waited to see how this new virus would affect local and state programs. More and more demands for comprehensive mosquito control cause most North Carolina programs to become and/or expand to surveillance based mosquito control as budgets and other resources continue to shrink.

As West Nile Virus spreads across the Northeastern part of the United States consumer advocates grow concerned over use of "DEET" in 2000, especially on small children. West Nile Virus is discovered in North Carolina in Chatham County in a Crow on September 27, 2000 by US Army Corps of Engineers at Jordon Lake State Park. The crow was confirmed positive for West Nile Virus using reverse transcriptase polymerase chain reaction testing at the National Wildlife Health Center in Madison, Wisconsin.

Dr. John Reinert, in 2000, elevates subgeneric name "Ochlerotatus" to genus level. (Journal of American Mosquito Control Association 16: 175-188) The only mosquito species in North Carolina retaining the name *Aedes* are: *Aedes cinereus*, *Aedes vexans*, *Aedes aegypti*, and *Aedes albopictus*. Dr. Bruce Harrison, Jeff Brown, Joe Andrews, Parker Whitt, Rick Hickman, Marcée Toliver and others begin efforts to provide invaluable educational opportunities through larval and adult identification workshops across the State. Additionally, in 2000 the Association remembers Charlie McCotter and Ray Bowen who passed away. Charlie McCotter was the Association's first president.

In 2002 and 2003 several counties adopt local mosquito control ordinances as a result of the increased incidence of West Nile Virus and Eastern Equine Encephalitis. Taken from the North Carolina "NC 2003 Arboviral Surveillance Data -- Annual Summary":

Recent Trends in West Nile Virus Activity – North Carolina

<u>Surveillance Indicator:</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>YTD</u>
Humans:	0	0	2	24	
Horses:	0	7	29	126	
Dead Birds:	1	8	210	140	
Mosquitoes:	0	0	2	5	
Sentinel Chickens:*	0	3	1	4	
Totals:		1	18	244	297

There was a reduction in sentinel chicken flock numbers from an average of 54 flocks in 2000 & 2001 to 19 flocks in calendar year 2002.

Recent Trends in EEE Virus Activity – North Carolina

Surveillance Indicator:	2000	2001	2002	2003	YTD
Humans:	2	0	1	1	
Horses:	18	11	3	113(& 1 Llama)	
Dead Birds:	9	2	0	2	
Mosquitoes:	4	2	1	9	
<u>Sentinel Chickens:*</u>	<u>63</u>	<u>29</u>	<u>17</u>	<u>34</u>	
<u>Totals:</u>		<u>96</u>	<u>44</u>	<u>22</u>	<u>160</u>

There was a reduction in sentinel chicken flock numbers from an average of 54 flocks in 2000 & 2001 to 19 flocks in calendar year 2002.

Recent Trends in LaCrosse Virus Activity – North Carolina

Surveillance Indicator:	2000	2001	2002	2003	YTD
Humans:	7	14	20	24	
<u>Mosquitoes:</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Totals:</u>		<u>7</u>	<u>14</u>	<u>20</u>	<u>24</u>

Equines, dead birds and sentinel chickens are inappropriate indicators for LAC activity

In 2003, Dr. Alice Anderson resigns after 20 years with Public Health Pest Management to take a faculty position in Environmental Health with East Carolina University. Alice was instrumental in the development of the “open marsh water management” program through the 1980’s and 1990’s. Alice served on various committees and leadership positions with NCMVCA and MAMCA. Alice was president of the NCMVCA in 1993.

APPENDIX

LIST OF PAST PRESIDENTS	
1965	Charlie McCotter
1966	Dewey Boseman
1967	Heath Howie
1968	David A. Hill
1969	John M. Hirst
1970	George Swearingen
1971	James Fulp
1972	W.H. Cranford
1973	Alton D. Harris
1974	Donald F. Ashton
1975	John Waters
1976	Richard C. Axtell
1977	Hamilton W. Stevens
1978	Earl C. Johnson
1979	M. V. Rice
1980	Maurice P. Edmondson
1981	David Underhill
1982	Donald R. Willard
1983	Robert T. Barden
1984	Charles S. Apperson
1985	Thurman Tyson
1986	James L. “Eck” Brown

1986	Larry J. Jim Bryan
1987	Michael U. Rhodes
1988	Bobby T. Waters
1989	Marc Slaff
1990	John Myers
1991	Delbert Bryant
1992	Phillip Rivenbark
1993	Alice Anderson
1994	Dennis Salmen
1995	Ken Sholar
1996	Peter Connelly
1997	Jim Earp
1998	Parker Whitt
1999	Joe Strickhouser
2000	Bruce Harrison
2001	Jeff Brown
2002	Ken Manuel
2003	Ray Silverthorne
2004	Joe Andrews
2005	Joe Garcia
2006	Walker Rayburn
2007	Eugene McRoy

The following links are under construction. Check back for updates.

- 1965 LIST OF MEMBERS AND AGENCY
- ORIGINAL LANGUAGE IN CONSTITUTION
- PRE 1993 CONSTITUTION
- 1993 CONSTITUTION AMENDED
- 1996 MANUAL OF PROCEDURES WITH TIME TABLE

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