ANNUAL
REPORT
1996

NOMCB

NEW ORLEANS MOSQUITO CONTROL BOARD

Staff

by C.J. Leonard

Public Information is an Important Component of Integrated Mosquito Management

CITY OF NEW ORLEANS

NEW ORLEANS MOSQUITO CONTROL BOARD

ANNUAL REPORT

1996

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DIRECTOR'S ANNUAL REPORT

1996

EDGAR BORDES

Change is on the way for the New Orleans Mosquito Control Board. The board has assumed the expanded responsibility of combating the Formosan termite in city structures and trees. This responsibility was at the prompting of the current administration and this effort has received their full support. Additional positions and additional funding have allowed the Formosan termite control program to solicit outside funding that have doubled the initial dollars invested by the city administration.

The City of New Orleans is an ideal collaborator for commercial interests to partner with because we are dealing with the city owned structures for experimental use of new termite control products. Evaluation of the effectiveness of the new materials can take place at a scientific pace rather than with the pressure of an individual property owner that requires the concept of instant control. In addition to several hundred buildings that are infested with Formosan termites, the city is also responsible for between 500,000 and 1,000,000 trees that are also subject to infestation for this aggressive foreign invader.

We have always heard that necessity is the mother of invention, but I believe that opportunity is the father of success. Our Formosan termite control efforts have been so successful because we have availed ourselves of the opportunity to utilize the resources available to us. New Orleans is a city that is mostly below sea level with above average rainfall and above average temperature. It is my opinion that the city of New Orleans is the most heavily Formosan termite-infested city in the world. The largest Formosan

termite colony ever characterized, 60,000,000-70,000,000 individuals, was located in the city of New Orleans. Formosan termites were introduced into the city of New Orleans more than fifty-five years ago and the population is still growing and expanding. The pressure exerted by these numbers of termites will continue to challenge all of the available termite control technology and our program will strive to maintain our edge of control of this ever expanding threat to the buildings and trees of the city of New Orleans.

Mosquito control operations were average for the year with below average rainfall contributing to the not very abundant mosquito populations in Orleans Parish. *Culex salinarius* and *Aedes vexans* were the most abundant species collected in the thirty-three light traps operated in the 360 square mile area of the city of New Orleans.

There is one constant in the mosquito population in New Orleans that is the presence of *Aedes albopictus*, the Asian tiger mosquito, as the dominant back yard, container breeding mosquito. Records indicate that *Aedes albopictus* was responsible for more than 90% of all telephone complaints received by this office. The Asian tiger mosquito problem was addressed with our participation in the Strategic Inspection Force that was created by the office of Mayor Marc Morial. SIF is a city cleanup program that places numerous city departments to detect and correct problems that are not conducive to a quality that the citizens expect to enjoy. More than 14, 000 mosquito control brochures were handed out during these cleanup programs. Louisiana State Department of Environmental Quality has helped with our container breeding mosquito problem with a program to remove promiscuous tire piles. Additional educational efforts included displays at festivals and public functions such as Earth Fest, Swamp Fest, Spring and Fall Garden show, Little Town Hall Meetings, many schools and civic groups. Source reduction and education were our primary weapons to control the Asian tiger mosquito but ground ULV and hand-held foggers were utilized when necessary.

Aviation operations increased slightly this year with the Britten Norman Islander and the Grumman Ag-Cat being used from New Orleans East to Fort Pike and Lower Algiers. Adulticiding operations were conducted without complications and the aircraft remain ready to service the needs of Orleans Parish. All records and files were maintained and all maintenance directives and inspections were completed.

Source reduction activity continued with the City Park dredge project nearing completion. Dredging operations have returned the lagoon system to its original depth and restored to shoreline to mosquito control standards. Several other urban source reduction projects were completed with the backhoes and dump trucks. All source reduction projects in New Orleans were monitored for effectiveness and the results were very encouraging.

Public education efforts were directed to improved software and equipment to upgrade our computers. Our e-mail address is nomcb@neosoft.com and our web site is http://www.neosoft.com/~nomcb. Our science education program directed to the 220 schools in Orleans Parish was expanded to include the following video programs:

"The Mosquito Problem"
"Mosquito Control: Science at Work"
"Integrated Pest Management"
"Copepods: Biological Control that Works"
"Termites: The Unseen Destroyer"

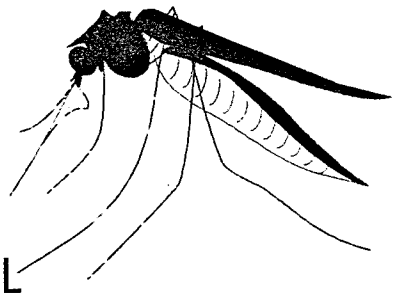
These videos are provided to the school along with teachers guides, mosquito eggs and larvae food. Several new tapes are in production and some of the older tapes are in the process of being revised.

Encephalitis surveillance consisted of sentinel chickens as the primary indicator bird. Wild bird bloods were unavailable in some high risk areas of the city so the sentinel chickens were utilized to fill these gaps. We have designed and built a four-bird sentinel chicken cage that is only visited once a week to feed and water the animals. The New Orleans fire Department again allowed us to place our cages at 12 of their fire stations. The remaining six cages were housed by private citizens.

Biological control efforts continued with our most successful export program in Vietnam. Larvivorous copepods placed in village cisterns are continuing to control mosquito populations in these test sites. The Vietnamese project has been so successful that our colleagues have received funding from an Australian corporation for expanded field trials and a Dutch agency is planning a large scale project using cyclops throughout Vietnam. An NOMCB manuscript on cyclops production and their use in biological control is nearing completion. Our manual on mosquito rearing is currently available to other researchers on request. The use of indigestible algae is still ongoing with *Cynobacterium* and *Chlorella photothecoides* as the primary test organism.

Change is always taking place, some of us recognize the process, a number of us do not see it taking place and still others choose to ignore the procedure. The management of insect pests by the application of chemical is an antiquated process that will change due to the demands and pressures of our superiors, the public. Here at New Orleans Mosquito Control Board we hope to anticipate these changes and be prepared to move into the future with solutions before there is a mandate from the public.

ENTOMOLOGICAL REPORT --



MIKE CARROLL

Mosquito activity and mosquito-borne disease was mostly uneventful during 1996. Adult mosquito activity was somewhat above average, requiring frequent ground and aerial spraying. There were no reports or surveillance data to support any disease activity.

Cold and windy weather in January and February kept mosquito populations well below normal. Warm March temperatures failed to stimulate an increase in the populations, with the exception of *Aedes vexans*, which appeared in large numbers through June, a month highlighted by numerous larviciding, ground, and aerial adulticide missions.

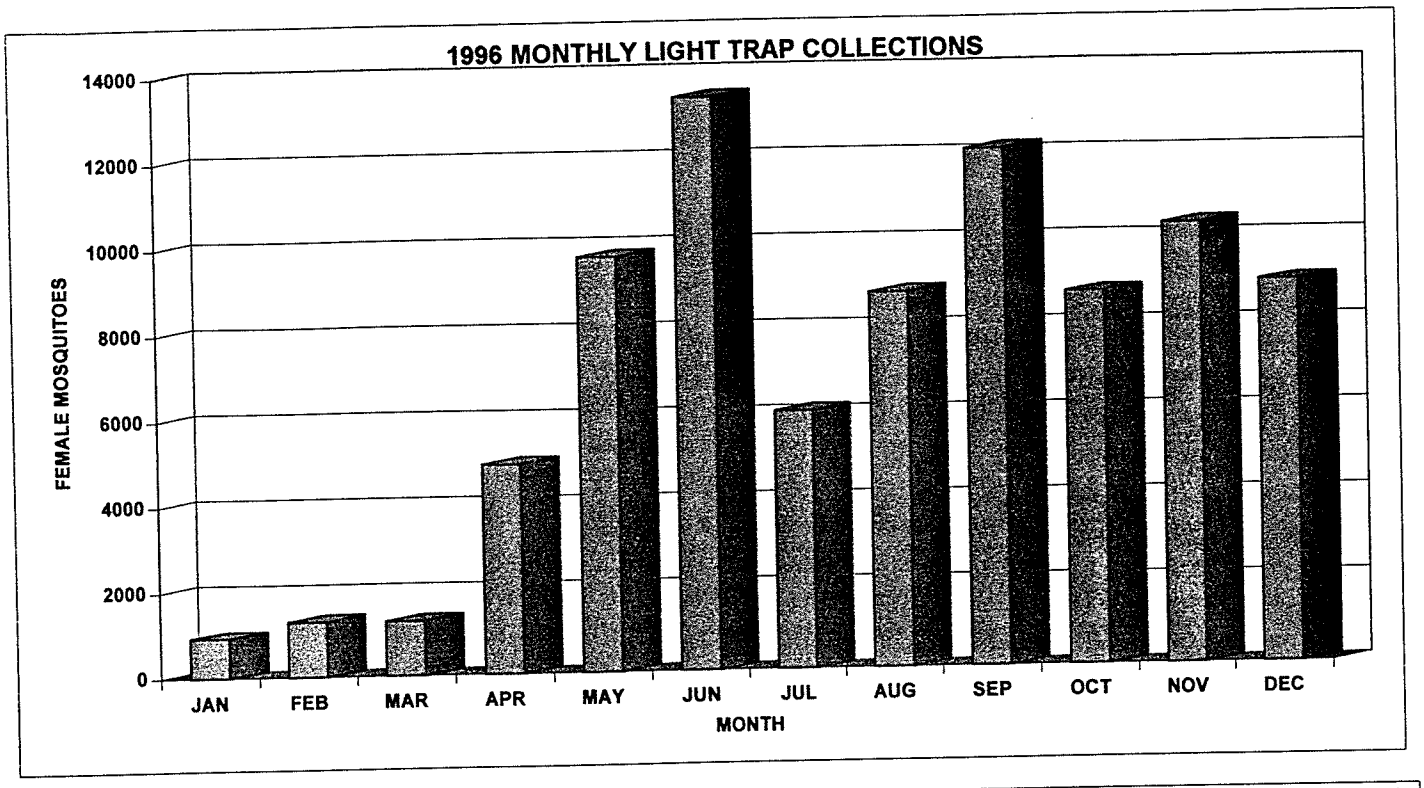
Aedes vexans and *Culex salinarius* required repeated spraying through November. December was exceptionally mild. Was it not for near record low rainfall, we could have been spraying through Christmas.

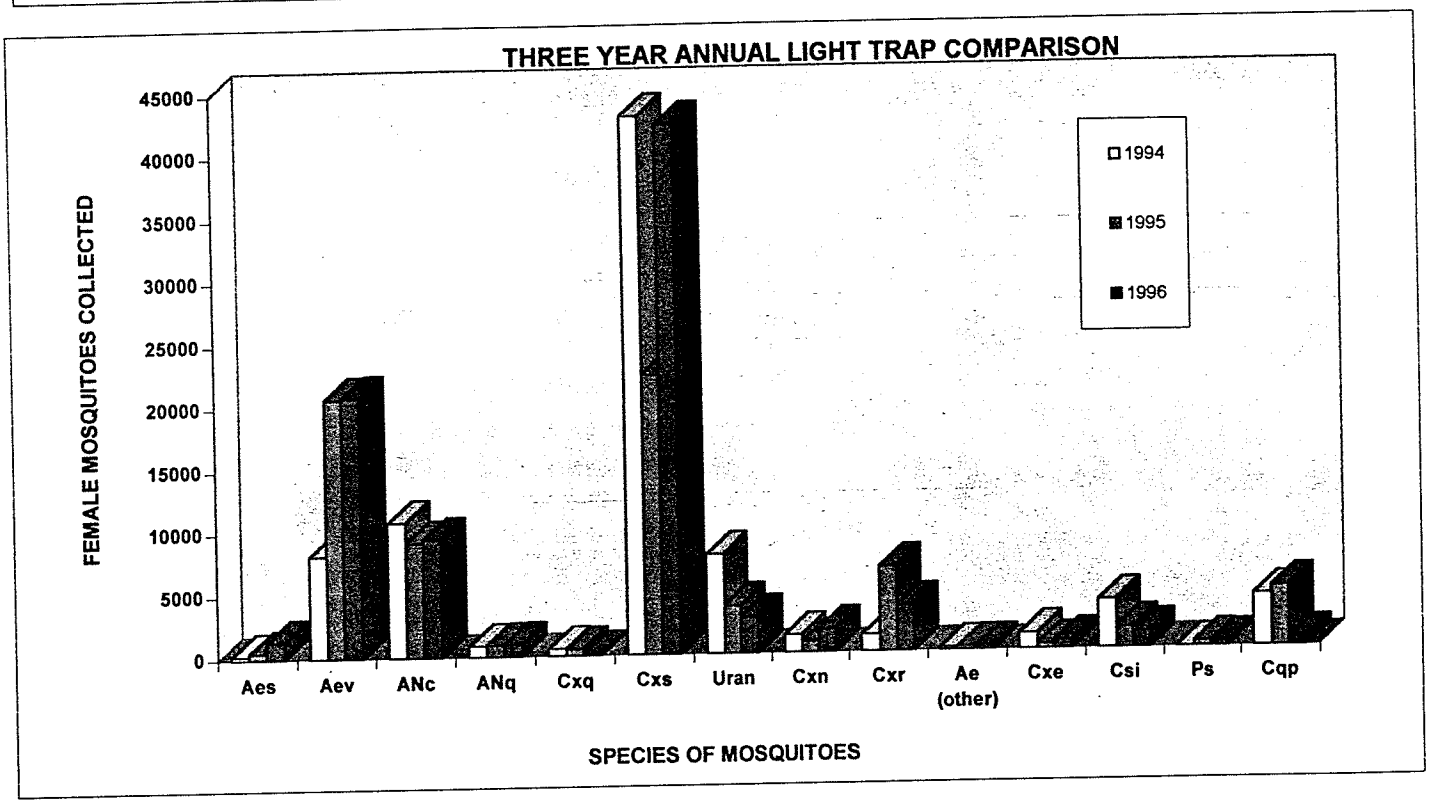
The percentages of female mosquitoes collected in the light traps for 1996 and 1995 are compared as follows:

SPECIES	1996 DATA	1995 DATA
Culex salinarius	49%	31%
Aedes vexans	24%	28%
Anopheles crucians	11%	13%
Culex restuans	4%	9%
Uranotaenia sp.	3%	5%
Culex nigripalpus	2%	1%
Aedes sollicitans	2%	1%
Anopheles quadrimaculatus	1%	1%
Culiseta inornata	1%	2%
Culex erraticus	>1%	>1%
Coquillettidia perturbans	>1%	7%
Others	>1%	>1%

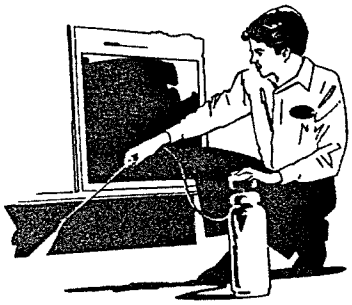
1996 Annual Light Trap Collection

	Male	Female	Aes	Aev	ANc	ANq	Cxq	Cxs	Uran	Cxn	Cxr	Ae	Cxe	Csi	Ps	Cqp
1. Willow Drive	447	8948	0\9	103\1925	11\314	8\158	0\8	288\5237	14\104	3\395	10\409	0\14	1\153	4\173	5\39	0\10
2. Tall Pines	267	2666	0\2	126\1256	4\17	0\14	0\1	123\1171	2\7	0\76	10\79	0\3	0\16	2\15	0\7	0\2
3. English Turn	146	1217		43\241	0\38	0\22	0\4	96\725	0\20	0\67	6\69	1\10	0\4	0\13	0\0	0\4
4. Olivier Street	595	1633	0\2	66\689	5\38	3\28	1\16	465\610	1\17	3\30	46\142	3\13	0\15	1\23	1\8	0\2
5. Seine Street	92	736		18\318	5\11	2\10	0\3	38\267	0\5	0\11	24\88	4\6	0\4	1\10	0\2	0\1
6. Tennessee St.	25	84		7\21	0\1		0\1	17\25	0\30		0\2	0\2	0\1	0\1	1\0	0
7. Louire Street	9	56		2\22	1\0	0\1	1\2	4\14	0\2		0\13			1\1	0\1	
8. S. Saratoga St.	38	148		10\66	0\8	0\1	0\4	24\52	0\1	0\1	4\12	0\2		0\1		
9. LA Avenue	197	378		26\57	1\7	0\1	0\4	123\179		0\2	44\116	1\5		2\7		
10. Hillary Street	172	569		17\207	1\17	0\4	0\2	114\176	0\2	0\7	37\125	26	0\2	0\20	1\0	0\1
11. Audubon Zoo	446	2202		130\1131	28\77	5\67	0\24	228\593	3\39	2\14	43\145	3\7	2\39	1\14	1\50	0\2
12. Trafalgar	449	3939		143\2222	5\76	0\16	0\2	238\1135	0\11	0\22	48\380	5\8	0\8	7\46	3\13	
13. City Park	172	771		90\491	7\15	7\50	0\2	57\135	0\20	2\7	3\13	4\12	0\5	1\5	1\15	0\1
14. S. Genois	29	74		12\40	0\1	1\0	0\1	16\19	0\1		0\10	0\2				
15. Longuevue Gd.	634	3344	0\1	351\1636	11\60	2\60	0\14	199\1097	8\53	1\44	51\247	3\9	6\72	0\34	2\16	
16. Killdeer Street	341	926	0\1	99\409	12\46	1\17	0\4	167\222	2\60	0\9	49\106	8\13	0\2	3\32	0\1	0\4
17. Louisville	179	640	0\1	71\376	3\8	0\7	0\1	64\104	0\9	0\4	37\96	1\7	0\3	3\21		0\3
18. Pont. Park	73	442		25\206	0\2	0\1		45\192		0\6	0\22	3\4	0\2	0\6	0\1	
19. Acacia Street	67	245		39\161	0\5	0\1		24\41	0\4	0\4	4\20	0\4	0\2	0\3		
20. Werner Drive	271	1174		130\612	3\16	0\4	0\3	105\344	2\20	0\32	23\111	4\10	0\8	4\13	0\1	
21. Lil. A'Corn	443	1918		184\913	4\32	0\7	0\3	205\636	3\13	0\36	37\188	4\20	0\3	2\54	4\8	0\4
22. Vincent	987	5662	0\6	247\2291	6\104	0\66	0\5	620\2317	5\73	1\34	87\268	0\13	0\32	2\98	0\15	19\340
23. Vil. DeL'Es.	201	2274	0\1	57\1003	4\51	2\78	0\4	113\857	2\30	0\63	9\63	2\27	0\22	12\36	0\4	0\35
24. Resthaven Mem.	99	2743	0\14	8\162	3\72	2\74	0\21	76\2055	0\22	0\131	6\91	1\15	0\52	1\19	2\8	0\7
25. Joe Madere's	129	2558	0\24	11\272	14\174	2\58	0\1	85\1618	8\221	4\70	3\45	0\1	0\42	2\23	0\1	0\8
26. Lk. Barrington	195	355		42\128	2\9	0\1	0\2	120\134	2\20	0\2	26\37	3\3	0\1	0\15	0\2	0\1
27. Irish Bayou	422	3739	0\20	23\186	101\781	0\9		246\2161	6\303	0\68	34\103	0\9	0\26	12\59	0\6	0\8
28. Venetian Isles	753	7671	0\72	70\370	100\1544	1\55	0\1	558\4880	0\171	4\138	16\302	1\56	0\21	3\51	0\10	
29. Green Ditch	309	6239	4\446	17\437	91\2573	0\42		180\2226	1\77	9\223	2\26	4\16	0\37	1\75	0\17	0\44
30. Rigolets	505	3939	9\331	86\770	90\458	0\34		313\2139	1\42	0\65	2\13	0\7	0\22	1\8	01\36	2\14
31. Lake Forest	968	3045	0\3	447\1466	5\43	0\4		469\1144	1\49	6\44	38\202	0\4	0\12	2\69	0\5	
32. Oak Island	72	579	0\2	34\148	2\40	0\9		27\225	1\61	1\22	4\21	0\1	0\3	1\6	0\2	2\39
33. Brazilere Island	1166	15371	4\422	30\546	517\2766	1\35		606\9558	4\1377	0\185	2\44	0\58	0\8	2\298	0\45	0\29
Total	10898	86285	17\1357	2764\20778	1036\9404	37\934	2\133	6053\42288	66\2864	36\1812	705\3608	57\211	9\617	71\1249	22\314	23\559
	%		1.6	24.1	10.9	1.1	0.2	49.1	3.3	2.1	4.2	0.3	0.7	1.4	0.4	0.6


1996 MONTHLY LIGHT TRAP COLLECTIONS
FEMALE MOSQUITOES
14000
12000
10000
8000
6000
4000
2000
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
MONTH


THREE YEAR ANNUAL LIGHT TRAP COMPARISON
FEMALE MOSQUITOES COLLECTED
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
1994
1995
1996
Aes
Aev
ANc
ANq
Cxq
Cxs
Uran
Cxn
Cxr
Ae (other)
Cxe
Csi
Ps
Cqp
SPECIES OF MOSQUITOES

FIELD OPERATIONS --



STEVE SACKETT

Aedes albopictus won the gold medal again this year for "Worst Urban Pest Mosquito," as more than 90% of all telephone complaints were related to this species. Two programs are now in place in an attempt to reduce container-breeding mosquito problems, being the Strategic Inspection Force (SIF), and the DEQ program to remove promiscuous tire piles. SIF is a city cleanup program in which inspectors from various departments check neighborhoods for problems/violations such as junk cars, abandoned houses, poor drainage, potholes, sewer leaks, and other problems that depreciate the area or cause concern for public health. Our primary involvement with this program is the distribution of brochures (prevention of backyard mosquito breeding), and the treatment of breeding sites when necessary. Almost 14,000 brochures were hand delivered to residents in selected neighborhoods. The second program involved the removal of tire piles by the State Department of Environmental Quality. This program utilized funds generated by the state tire tax and was very successful in eliminating all the major tire piles in the city. Mosquito control personnel played a key role in this process with tire surveys and inspections. Although the large accumulations of tires have been removed, massive numbers of tires still exist scattered in residential areas and serve as primary oviposition sites and breeding foci.

In addition to the SIF program, thousands of people were reached through events such as Earth Fest, Swamp Fest, Spring and Fall Garden Shows, Town Hall Meetings, and other gatherings in which we set up displays of mosquito control techniques/biological control agents and discussed the public's role in preventing backyard mosquito breeding. Source reduction and public education were our primary weapons against *Ae. albopictus*, but ground ULV and hand-held foggers were utilized when appropriate.

Flood water and permanent-water mosquito populations appeared fairly normal throughout the year, with no major crises occurring. Aggressive larviciding activities certainly helped to reduce the amount of adulticiding required. Aerial ULV was utilized in areas not accessible to ground units.

A test was conducted to compare mosquito collections in New Jersey light traps using either a 40-watt Philips "Earthlight" or a standard 25-watt incandescent bulb as the light source. The "Earthlight" is rated as having a 10,000 hour life and had the potential to minimize the problems of light traps being out of operation due to burned bulbs. Two light traps were operated bi-weekly at the same site from September through November, 1996, and all mosquitoes were identified to sex and species. As seen in Figure 1, a dramatic

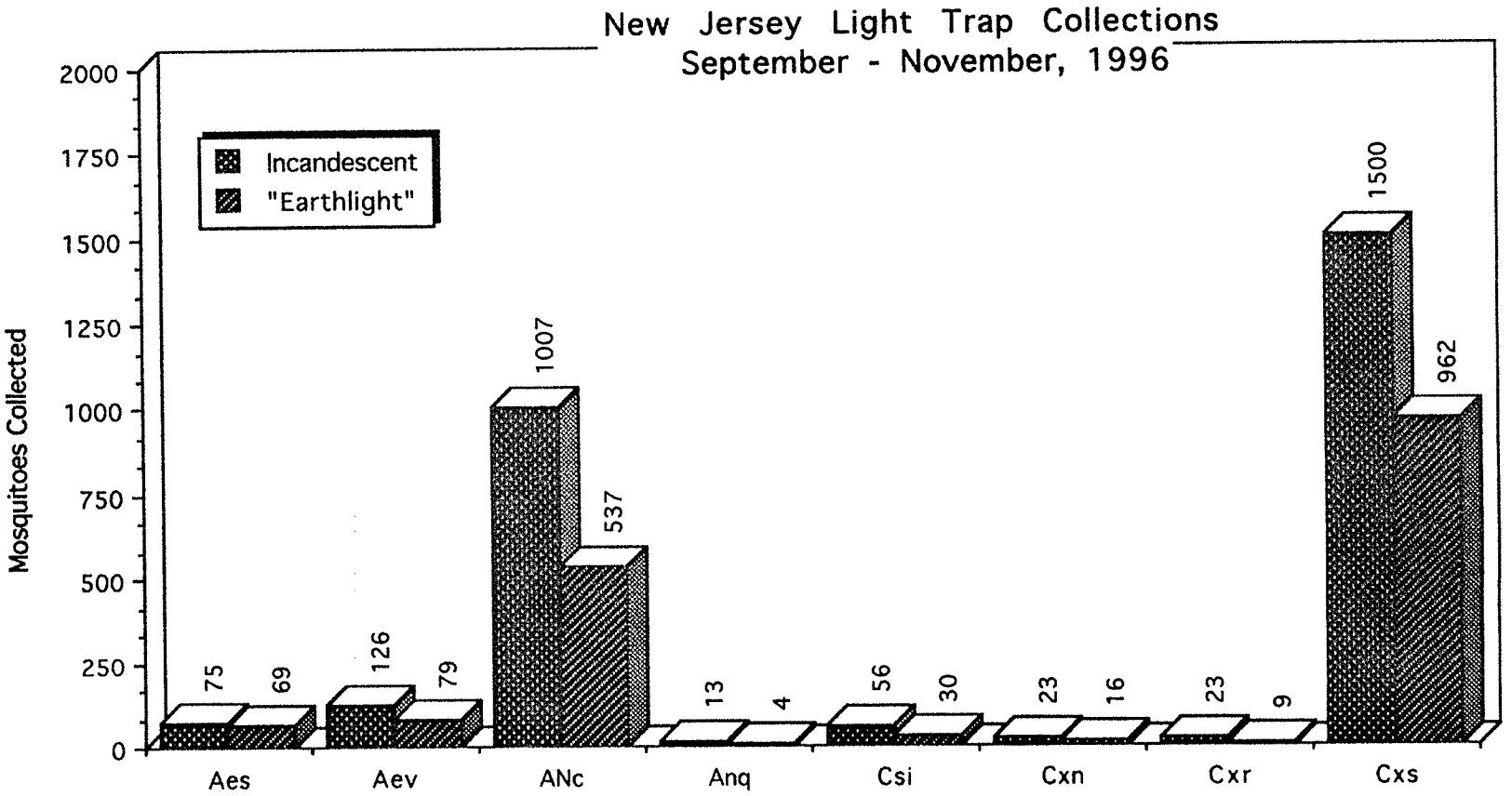
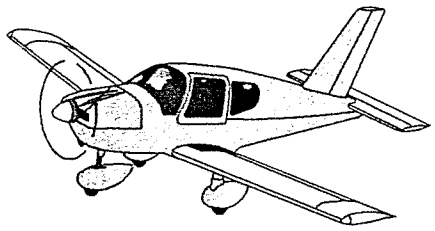


Fig. 1 - Comparison of mosquito captures in the New Jersey light traps utilizing 25w incandescent bulbs or 40w "Earthlight" bulbs.

reduction (40%) in mosquito collections was observed for all species using the "Earthlight" compared to the standard bulb. The total female captures for the "Earthlight" was 1706, compared to 2823 for the standard bulb. The 25-watt incandescent will remain our bulb of choice in the New Jersey light traps.

AVIATION OPERATIONS --



JOSEPH RIEDL

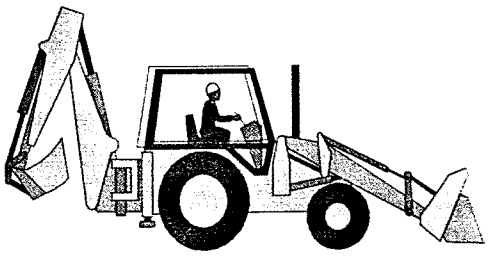
Aircraft usage in the Britten Norman (twin engine) Islander and the Grumman (single engine) AG-Cat was up again this year. Aerial treatment was conducted mostly in the areas from New Orleans East to Fort Pike and Lower Algiers. This was due to the high concentrations of mosquitoes in those sections. Once again, malathion at a rate of three ounces per acre was dispensed from the Islander and Scourge at one ounce per acre from the AG-Cat. Adulticiding operations went normally with no serious problems . The airplanes were also used on surveillance, test, and proficiency flights. Both planes remain ready to spray should the need arise.

Work continued, throughout the year, in our aircraft maintenance shop. The required F.A.A. annual inspections were completed during the off season on the airplanes. On the Islander, the upper strobe light was replaced and the lower light resealed. A new left hand engine magneto was installed. The outdated emergency locator transmitter battery was replaced. Engine spark plugs were changed. A sheet metal repair was done on the L.H. landing gear because of cracks. A couple of worn wheel bearings were replaced. A faulty R.H. fuel tip tank gage was changed. A defective fuel gascolater has been replaced. With the AG-Cat, the propeller was overhauled and re-installed. This is a time change requirement. The twenty-four month altimeter and transponder check was accomplished. Two worn wheel bearings were replaced. The altimeter was removed, repaired, and re-installed after a problem with it. Both airplane spray systems, during the year, were cleaned, checked and calibrated. Nozzles and diaphragms were changed at this time. The Islanders spray system pressure gauges wore out and were replaced. The airplanes were polished this summer as is our policy. The machines were washed after every spray flight. All airworthiness directives pertaining to the planes were complied with. The life vests were inspected. Lubrication requirements were carried out. Preventive maintenance was accomplished. Radio problems were corrected. The hangar and ground support equipment was maintained.

Prior to the spraying season, the public was notified of our continued intentions to adulticide in Orleans parish. The Federal Aviation Administration was notified. Renewal forms were filled out and insurance was acquired. Flight physicals were taken and cholinesterase checks made. Pilot proficiency was maintained. Surveillance flights were conducted. The airplanes were ready when needed. This is in line with preparations made every year.

Aircraft records and files were kept up to date. Manual revisions and inspection microfiche were inserted as received. I attended the Aerial Applicator's Conference and Drift Minimization Workshop. To renew my Aerial Applicator's Certificate I attended the Louisiana Mosquito Control Association's meeting. I went to the Gulf South Aviation Maintenance Seminar and renewed my Inspection Authorization. This allows us to continue performing annual inspections and major repairs and alterations. I took a biennial flight review. Also, at the Aircraft Owners and Pilot's Association Clinic, I renewed my Flight Instructor's 33 Certificates. Preparations are being made for the upcoming spray season.

SOURCE REDUCTION--

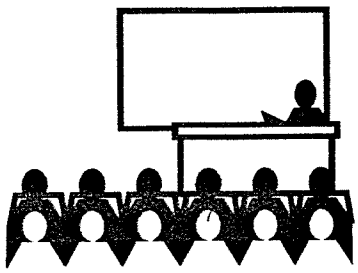


BROOKS HARTMAN

Source reduction personnel were assigned to the City Park dredge project for most of 1996. In the month of June the dredge unit was moved from the Casino building and placed at Marconi Drive and City Park Avenue, where silt laden effluent material was pumped into the old park swimming pool. The use of the pool as a disposal site has been a tremendous success. We will continue to use the pool through part of 1997. Dredging has brought the lagoon system back to its original depth improving drainage which helps to reduce mosquito breeding habitat along high ground on either side of the lagoon system. Dredging is being done at a slow pace to insure that most all of the material is removed from the lagoon bottom. We are hoping to complete the project by late 1997.

The backhoe and dump truck were also used this year in the City Park project and area R1 (Willowbrook Drive, Kim Drive, Queen Mary Drive) New Orleans East. Approximately 15 flooded city lots were found to be breeding within the above boundaries and were drained into nearby sub surface drainage. The drainage of this one area will reduce much adult mosquito activity around nearby subdivisions, schools, shopping centers, and commercial developments. Monitoring of all source reduction sites in Orleans Parish will be done on a regular schedule during the coming year.

PUBLIC EDUCATION--



C. J. LEONARD

The computer has done much to enhance the Public Education program this year. Mailing lists and lists of teachers were the first jobs for the computer. Upgrades and new equipment gave us new abilities. Internal (RAM) memory was increased in all the computers to at least 16 megabytes, the public education computer was upgraded to 32 mg, a faster video card was also installed to better handle photographs and video.

Two new pieces of equipment will allow us to use the computer to help make video programs. A video capture device called a "snappy" allows us to capture video from any source, (tape, camcorder, etc.). The video is captured as a computer file which can then be printed or used in documents. The second device changes the computers VGA output to NTSC. This is the common video format that can be shown on any monitor or recorded onto videotape. The ability to record computer graphics on tape means we can use the computer as a character generator that is much better and easier to use than the one in the video truck. The elimination of the aging character generator will be a great help. The upgrade of the new computers continued with the installation of the "windows 95" operating system. The new operating system was installed because many of the programs we wish to use will not run on windows 3.11.

I attended a one day seminar on the Internet, given by Fred Pryor seminars. We now have connection to the Internet on our IBM computers. Our e-mail address is nomcb@neosoft.com.

I attended the SIGGRAPH exposition at the Convention Center. I had been wanting to observe computer based video editing systems and animation software at work so that I could choose something that would work for the Mosquito Control Board. The price of a computer based editing systems has dropped dramatically in the last two years. This is probably our best choice to replace some of our aging equipment. The SIGGRAPH show allowed me to see these systems in action at first hand.

Animation software is also becoming affordable. With these new tools we would be able to produce an animated video for school children. I feel that this would be the best Public education tool for smaller children.

I traveled to Lafayette for one day to observe and get specs on a computer based editing system. The session included three hours of hands on work with the system. This allowed

me to find out if the system will really do what I want it to do.

I am working with a product called "Video Director" made by Pinnacle Systems Inc. This product consists of computer software and hardware to control camcorders, VCR's and manage tape libraries and edit decision lists. While the program assembles tapes in a linear fashion, the edit decision list can be changed at any time to produce a new tape. I have ordered an additional computer card to work with video director and allow me to add titles and graphics. We have also begun to set up an Internet home page.

The computer was used to re-edit maps of Formosan Termite distribution in the state of Louisiana and the United States. A line drawing was created of the tamper proof bait station cover manufactured by NOMCB.

In January a letter was sent to science teachers in 220 schools in Orleans Parish. The letter explained that five videos were available to schools:

"THE MOSQUITO PROBLEM"
"MOSQUITO CONTROL: SCIENCE AT WORK"
"INTEGRATED PEST MANAGEMENT"
"COPEPODS: BIOLOGICAL CONTROL THAT WORKS"
"TERMITES: THE UNSEEN DESTROYER"

These videos are provided at no cost, along with teachers guides, mosquito eggs and larvae food. The teachers guides were updated with some new information this year. Also, the videos had a music track added. A second mailing was sent out in March. Several classes visited our facility from local schools such as Ben Franklin High School and Tulane School of Public Health and Tropical Medicine. The display was used several times, including the fall garden show at City Park and the Swamp Fest at Audubon Zoo.

A tape was made of termite damage to the Cabildo. This tape used graphics captured by the "Snappy" image capture device, and enhanced by the computer. A second tape was produced showing the termite damage in Perseverance Hall. These tapes are used to make presentations and to accompany grant applications. A short video was also produced on termite bait station covers developed by the New Orleans Mosquito Control Board.

Work has begun on a new termite tape. This project will be at least 30 minutes and may be edited in several versions. We hope to get one version broadcast, possibly on the local public television. The script is being written and a preliminary shot list is completed. Our computer video log will be searched for any shots that can be used, but much of this project will be new video. Parts of the script call for animation, it remains to be seen weather we can produce this with our own computer, or if it must be contracted out. Tapes

were copied for the Alabama Dept. of Public Health, and for the utilities dept. to run on the government access channel.

The Centers for Disease Control has contracted with NOMCB to video tape the life cycle of the *Aedes triseriatus* mosquito. The equipment was set up, special aquariums were made and mosquito eggs were received from CDC. The eggs would not initially hatch. After microscopic examination it was determined that they were not viable. CDC confirmed a problem with their colony. We received a fresh batch of eggs which we were able to hatch. Video of eggs hatching, larvae, pupae, oviposition, blood feeding and adult emergence was done. Adult emergence is always the most difficult segment because it is necessary to watch a single pupa until it emerges. Emergence has been filmed in a special aquarium which allows me to shoot from the side of the mosquito.

Maintenance was required on several pieces of video equipment. Maintenance on the video van included replacing a bad monitor cable and sending the character generator to the shop. The program monitor was also repaired. The 3/4 inch tape machine used for making copies of our tapes broke down. Apparently mice got inside the machine and caused such extensive damage that it is not worth repairing. A replacement is needed but we will probably switch to a Hi8mm machine since all our video is now acquired on Hi8.The monitor for the dredge was sent in for repairs. The unit had a blown fuse and is back in service.

A new camera was purchased for the dredge. The old camera was stolen by thieves who broke into the truck in broad daylight while the camera was in operation. The dredge crew is building a steel cage to protect the new camera.

A new camcorder and VCR were purchased for use by the termite entomologists. The termite entomologist has the opportunity to document many important aspects of the termite work, but lacks the time to set up a professional camera. A camcorder with image stabilizer will produce video stable enough to be used in our presentations. The VCR is a plain VHS unit to be used for making presentations in the field.

Slides were made for several termite and mosquito presentations. Close-up slides of termites were done. Slides are shot using a macro lens, bellows and ring flash. The chill table is used to make the insects move more slowly.

Title slides were made for the Director using Microsoft Power Point and the Snappy image capture device. The images were then photographed from the computer monitor with slide film. After several test rolls I found that the meter in the Nikon N2020 camera was too sensitive, giving erratic results depending on where the scanning beam was on the CRT. After metering with an older manual camera, the slides were shot again, and the results were excellent.

Slides were made of Infrared video that was taken of termite infestations. The IR camera is able to detect termite activity inside walls when there is no outward sign of termite activity. The IR camera may be a useful tool, but it is very expensive. The slides were made using the "Snappy" image capture device, and shooting off the computer screen. The results were very good.

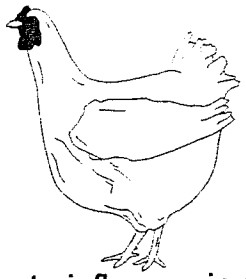
The slide files were also brought up to date. Although slides are no longer listed in the computer, there were more than two hundred that needed to be filed in slide boxes. Slides are now filed in categories and not individually.

Slides were made of several termite projects for presentations to be given by the director. Slides were also selected for use on the cover of this year's reports. Identification cards were made for our employees. Using the video capture device, and the color printer, we have produced ID cards with color photographs. Since these are stored in the computer, they can be reproduced easily if needed.

Our video log database is being improved by the addition of still pictures to represent each video clip. This will make the database quite large, so a ZIP drive has been purchased to allow us to save the file. A ZIP drive allows files of up to 100 megabytes to be saved on a special ZIP disc. These files can then be moved from one computer to another. I am also saving the still pictures as separate files in case we wish to make changes in the future. The still pictures make it much easier to choose video from our library. Our video library has more than 150 tape cassettes.

Logging of video tapes is proceeding. This is not a high priority but is done when time permits. I am thinking of using this technique to catalogue our slide files. This would enable me to produce a color printout that would be easy to use.

ENCEPHALITIS SURVEILLANCE — JACK LEONARD



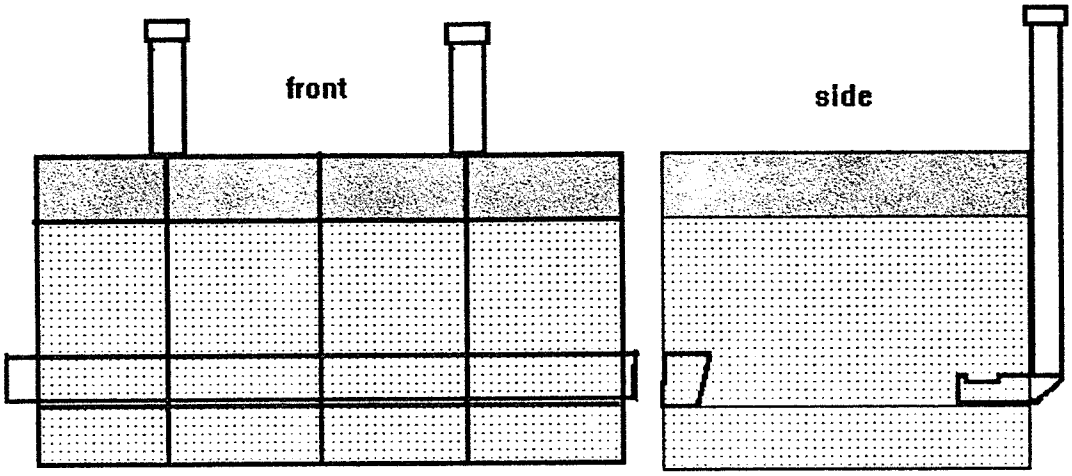
St. Louis Encephalitis is a viral disease that has symptoms similar to influenza in most cases. The disease has no cure and is fatal in approximately 5% of cases. The very old and the young are at greatest risk from this disease. Birds are the normal hosts of this disease. Mosquitoes transmit the virus from bird to bird and occasionally to man. The Mosquito Control Board has conducted a survey of bird blood for the past 28 years as an early warning of virus activity.

Sentinel chickens are used as the primary surveillance tool. Cages were constructed of

coated wire. Each cage held four chickens in separate compartments. Keeping the chickens in separate compartments eliminated the chickens preying on each other. Automatic feeders and waterers were provided.

New feeders were fabricated. The new feeders are made of schedule 40 PVC pipe. One 90-degree elbow, two caps, and a 18 inch piece of pipe make up the feeder. These feeders have been tested in a New Orleans rainstorm and found to keep the feed dry. The main advantage of the new feeders is that it is almost impossible for the chickens to throw the feed on the ground. Feed on the ground was a major problem last year. The improved system should allow us to visit each cage only once each week. This greatly reduced the man hours needed to operate the surveillance program.

New Orleans Mosquito Control Board Sentinel bird Cages



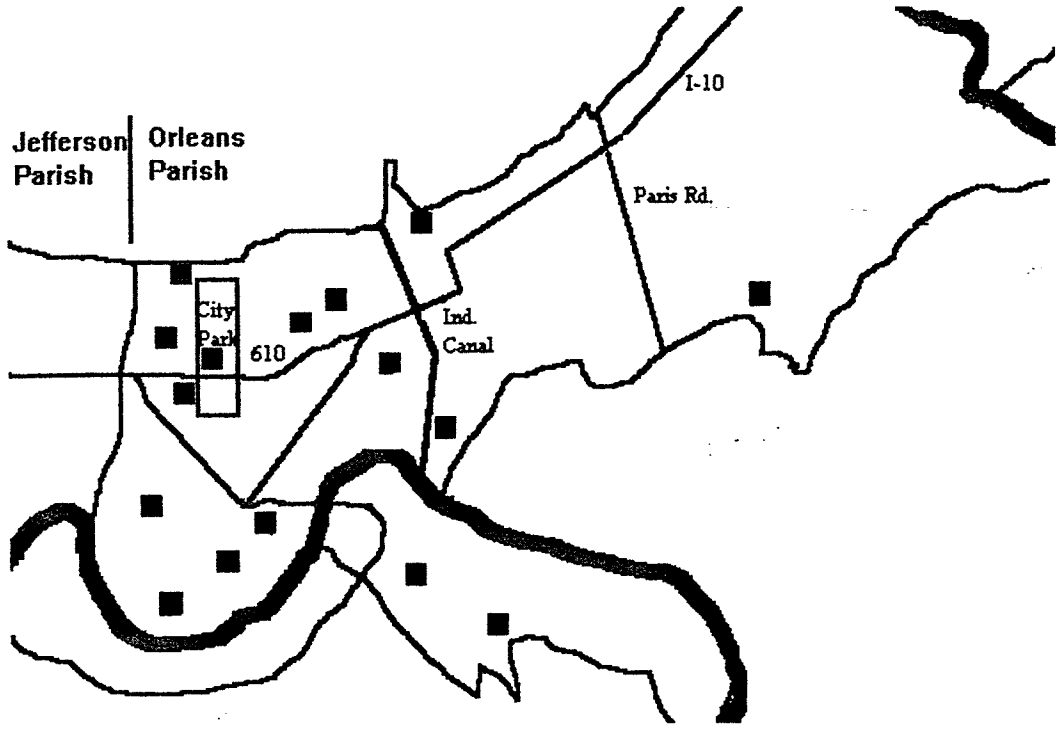
1" square plastic coated wire mesh

The New Orleans Fire Department again allowed us to place sentinel birds at 12 fire stations around the parish. We are grateful to Chief McDaniel for his assistance.

Two summer workers were trained in phlebotomy and assigned to this program. Wild bird traps were checked five days per week, and the chickens were bled each week. Eighteen chicken cages were deployed in Orleans Parish. Locations were selected for proximity to past virus activity.

Most cage locations did very well, with no complaints this year from cage locations. Several birds were lost due to unknown causes. The extremely hot weather was probably a factor. Unfortunately one of our cages was attacked by dogs, which killed all four birds. The birds at the locks have disappeared, apparently stolen, for the second time. The cage

at the locks is behind an eight-foot chain link fence topped with barbed wire. Perhaps too many people have keys to the lock. The cage at Fire station 33 on Gen. Meyer in Algiers had to be removed. The fire dept. decided the station was unsafe, and it was closed immediately. The sentinel cage locations are shown in the map below.



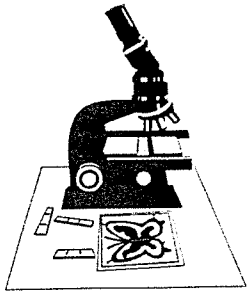
Seven hundred eighty samples were tested this year, all samples were tested by the State Lab and found to be negative.

With the arrival of the first cold front, the encephalitis surveillance season came to a close. We retrieved the cages and chickens were given away to any of our cooperators who wanted them. The cages were cleaned and stored for next year.

We are grateful to the New Orleans Fire Department for allowing us to place many of our cages on their property. The fire personnel have been very helpful throughout the season. The fire stations give us locations in an urban area where it is often difficult to find a property owner willing to keep a cage of chickens.

I have been designated the liaison between the state health department and the mosquito control districts. This means I will fax results of the state lab's blood tests to the other districts. The new computer makes this a fairly simple job. However, the information I receive is not always accurate or up to date. We hope to improve this system in the future.

BIOLOGICAL CONTROL --



GREG THOMPSON

Collaborative work with researchers in Vietnam during the past three years has shown that the placement of larvivorous copepods in village cisterns controls mosquito production. The villages in which this biological control measure was implemented saw a significant decrease in cases of mosquito borne diseases. These results are so encouraging that our colleagues in Vietnam have received funding from an Australia corporation for expanded field trials and a Dutch assistance agency is planning a large scale project using cyclops throughout Vietnam.

NOMCB researchers have shown the cynobacterium, *Chlorella photothecoides*, exerts a larvicidal effect on container-breeding mosquitoes. Mosquito larvae cannot digest this cynobacterium because it possesses a protective membrane of sporopollenin, a caratonoid that protects it from digestive enzymes. Although the most likely mechanism for *C. photothecoides* larvicidal effect is that larvae starve to death despite having full stomachs when this cynobacterium is abundant in the water column, at least two other possibilities for this larvicidal effect also exist. First, the cynobacterium might produce a not yet discovered toxic compound which poisons the larvae. Earlier researchers have argued that a closely related organism, *Chlorella ellipoidea*, produces a chemical which is toxic to Dipteran larvae. Second, *C. photothecoides*, which forms a thick sticky mat, might create so much physical interference with larval movement that the air-breathing insects drown. Research conducted by Sarath Krishnan, a student from Ben Franklin High, addressed this question for his state science fair project. He demonstrated that slowed development occurred in containers holding low concentrations of *C. photothecoides*, but at higher concentrations, 100% mortality occurred. The larvae died with their digestive tracts crammed with green indigestible algae. These results, combined with visual observation, clearly show that the mechanism for *C. photothecoides's* larvicidal effect under laboratory conditions is its indigestibility combined with the larvae's inability to restrict its intake of *C. photothecoides* in favor of nourishing fare.

NOMCB's public education program continues to expand. Bio-lab staff participated in many of these educational activities, including the following; Earth Day celebrations at UNO, Tulane, and Gallier Hall, each of the Mayor's neighborhood meetings, Audubon Zoo's Earth Fest and Swamp Fest, Spring Garden Show at City Park, and "Environment and the Law" at Tulane. We have presented programs to the Sierra Club, to summer youth camp groups at Bayou Sauvage, to Social Work and Contemporary Religion courses at area universities, and to elementary, middle, and high school classes throughout the city. During 1996, a wide range of individuals and groups also toured the bio-control

laboratory. These visitors included classes on school field trips (Head Start to Graduate School), teenage residents of a group home, staff of the Louisiana Nature and Science Center and the Audubon Zoo, and interested scientists and researchers from around the country and the world. We tailor each presentation to the interests of the group we are addressing. However our broad education message always is the importance of using an integrated pest management approach to mosquito control. After giving a history of mosquito control in New Orleans, we describe our reduction of pesticide use through a system of source reduction, monitoring and biological control and explain the importance of developing these non-pesticide means of mosquito control as a way of slowing the development of pesticide resistance in pest species, when addressing area residents we stress ways individuals can aid in the reduction of urban mosquitoes by monitoring their own yards for water-holding containers and then removing or emptying these prime mosquito breeding sites.

One of the major city-wide sources of mosquito production has been nearly removed. Effective mosquito control has been frustrated for years by the accumulation of used tires throughout the city. Water-holding tires provide the perfect breeding sites for our primary urban mosquitoes (*Aedes aegypti* and *Aedes albopictus*). Tires have been discarded along road sides and in vacant lots because landfills no longer accept tires and recyclers have found few uses for the tightly bound together strips of synthetic rubber and metal. An expanded state-wide program of tire collection and removal has resulted in the elimination of tens of thousands of street corner breeding containers and of the resulting mosquitoes. Area tire piles have in the past provided perfect multi-year field study sites for testing methods of bio-control. Although their removal destroyed wonderful study sites, these tire piles will not be missed by NOMCB or the other citizens of New Orleans.

The butterfly rearing project was terminated in October after two years of research. We produced and delivered to Audubon Zoo nearly 2,000 butterfly pupae for release in their "Butterflies in Flight" exhibit. The experience of rearing insect species other than mosquitoes gave staff many ideas for improving the maintenance of our colonies of mosquito and aquatic predators.

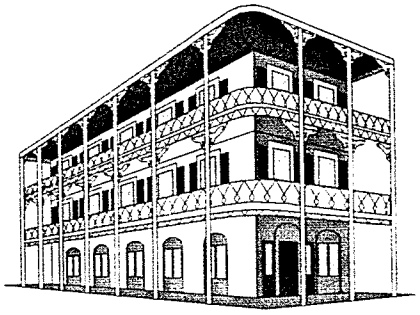
A NOMCB manuscript on cyclops production and their use in biological control is nearing completion. Our manual on mosquito rearing is currently available to other researchers on request.

Research conducted at NOMCB has determined which native, abundant aquatic animals will kill large numbers of mosquito larvae. Turtles such as the Red eared slider (*Trachemys scripta elegans*), fish such as the Golden Topminnow (*Fundulus chrysotus*), and copepods such as (*Mesocyclops longisetus*), are already used for mosquito control. However, a large number of other predatory insects will pursue and kill mosquito larvae when placed in small water-filled containers holding mosquito larvae. These insects may

have the potential to be used for mosquito control. What is still not known is whether or not these animals are effective predators of larvae under natural conditions. We are now looking at whether the presence of aquatic plants hinders the ability of these predators to capture mosquito larvae. This research will be completed next summer when aquatic predators are again plentiful in local waters.

We have had the opportunity this year to test two potential insect repellents. The first product was a time-release system for DEET. DEET is the active ingredient in most repellents currently on the market and a time-release system would increase the long-term effectiveness of each application. The second product involves a chemical which might discourage inactive mosquitoes from resting on treated surfaces during the day. This could be useful throughout the "Third World" where non screened windows permit mosquitoes to roost during the day inside of the homes of their nighttime feeding hosts.

TERMITE ENTOMOLOGY--



ED FREYTAG

One of the main objectives for the termite entomologists in 1996 was to establish study sites in city-owned buildings and those of historical importance to test the latest termite control technologies. This allowed chemical companies such as DowElanco and American Cyanamid to provide us with grants to assist them in testing the efficacy of their products against the Formosan termites in one of the most severely infested areas of the country, and at the same time, the City of New Orleans obtained the benefit of termite control at a fraction of the regular cost. Grants were also obtained from the National Center for Preservation Technology and Training (NCPTT) of the United States Department of the Interior National Park Service to eliminate Formosan and other termites in historical buildings. The research data acquired from these historical sites was obtained for studies with Dr. Nan-Yao Su of the University of Florida.

City-owned trees were also an important component of the termite entomology studies, and working in conjunction with the Tree Department in Parks and Parkway Commission, a database of termite infested trees was initiated for a source of trees to test termiticides. Other areas that we also got involved in included testing new termite detection equipment

such as the Decay Detection Drill and laparoscopes, disseminating information and maintaining a database of termite complaints of primarily city-owned trees and properties, conducting tours of the termite study sites, assisting City Planning in the placement of termite baits in city-owned buildings, and handling and shipping through-the-slab termite bait covers.

Studies with DowElanco

The Sentricon Colony Elimination System is DowElanco's product for controlling termites on structures. This system relies on the concept that the termites are randomly foraging in the soil and bring wood back to the termite nest to feed the queen and immature termites. A plastic housing containing wood is inserted in the soil surrounding a structure. When the termites attack this wood, the termites are removed and placed in a perforated plastic tube containing a cellulose matrix with the active ingredient hexaflumuron, an IGR or insect growth regulator. The termites feed on the bait and take it back to the nest to feed the colony. When the immature termites molt, the hexaflumuron prevents the synthesis of chitin to form the exoskeleton and therefore die. Because this is a slow process the termites are not alarmed and continue to feed on the treated bait. Eventually the colony collapses from lack of workers.

To establish experimental use permit sites (EUP) for DowElanco, several city-owned buildings were carefully inspected and monitored (usually bi-weekly) for the presence of new termite tubes and for feeding on the wooden stakes that were placed in the surrounding ground. Most of the buildings that we inspected were located from calls made by maintenance personnel complaining about a termite problem. Depending on the size and location of the infestation and level of termite activity, the sites were either selected or rejected by Dr. Eric Benson of DowElanco for the placement of bait stations. To locate active termite feeding sites, we used the AED (Acoustic Emissions Device), which detects the frequency that termites produce when chewing on wood. More counts indicate more feeding activity. The Sentricon Elimination System, consisting of a hexaflumuron impregnated cellulose matrix, was the only product that DowElanco tested with us.

In many of the buildings the below-ground bait stations had been established in 1995 and we only assisted Eric in inspecting and collecting data from the stations on a monthly schedule. The above-ground baiting was a new product that DowElanco was testing to determine if termite colonies could be eliminated from sites where below-ground placement of stations was not possible. We assisted in locating and establishing the bait stations and collecting data from these new sites.

The following is a list of the sites that were baited under EUP status in cooperation with Mosquito Control:

Mosquito Control Facility	Jackson Square
Vieux Carre Commission Building	Algiers Regional Library
Gallier Hall	Louisiana Nature Center
The Upper Pontalbas Apartments	Fire Station #7

At Gallier Hall and the Upper Pontalbas apartments, we subcontracted to core 3 inch diameter holes to place Sentricon bait stations below the sidewalk slab at 10-12 ft. intervals. With the completion of Wilkinson Street on the Pontalbas apartments, we now have the first and only entire French Quarter block surrounded by below-ground baits. By the end of the year, we could not detect termite activity at Gallier Hall, Mosquito Control Base, Fire Station No. 7, Vieux Carre Commission and Algiers Regional Library as indicated by the absence of termites in the bait stations an by the lack of counts with the AED. A bathroom at Mosquito Control Base was torn down and a 7 ft long by 1 ft wide by 1 ft deep termite nest was found with no live termites. At the Pontalbas apartments, there is still termite activity in one upstairs apartment and also in the new below-slab stations placed on the Wilkinson Street sidewalk.

Commercial Demonstration with DowElanco

The New Orleans Courthouse was established in 1995 as a commercial demonstration with the Sentricon Elimination system with below-ground baits. Approximately 85 Sentricon stations were monitored monthly by Susan Schimel (DowElanco's Technical and Development representative) with our assistance. This also allowed Roman and I to train in the installation, monitoring and data acquisition using the Prolinx software of the Sentricon system. By using stickers with unique bar code numbers, each individual bait station and bait tube was monitored. A Formosan colony was baited on the jail side where the baits are located under the slab, and native subterranean termites and Formosan termites were baited on the Tulane side of the building where the baits are located in soil.

American Cyanamid Studies

Several studies were initiated for Dr. Byron Reid of American Cyanamid which included a liquid material on structures and on trees, and below ground baits on structures and trees. The FINK Economic building (school board uninhabited buildings) in Algiers were treated using conventional termiticide methodology (trench an treat and drilling into the brick wall). The building adjacent to it, the Academic building, was used as an untreated control. Termite shelter tubes on the walls were used to monitor the termite activity to determine the effectiveness of the treatment and were inspected on a monthly basis.

Several city trees were treated with the liquid material and preliminary results appear to show that the Formosan termite activity decreased to zero on all treated trees, while the

untreated control had active termites even through the winter months. The structure and tree sites were monitored monthly and will continue to be monitored for a period of one year.

Two storage sheds belonging to Air Reldan flight school on Lakefront airport were treated for Formosan termites using American Cyanamid's below-ground baits. Several of the bait stations were attacked by termites but there is still activity on the sheds. As with all baits, it takes considerable time to affect the colony, so monitoring of this site will continue for a year.

A feeding preference study was also conducted for American Cyanamid in a site where Formosan termites were actively feeding on sections of a cut-up tree. We placed the feeding stations under the tree sections on top of the exit holes in the soil where the termites were active to insure the baits were attacked. After seven days the baits were checked and feeding observations recorded. After twenty days the feeding experiment was terminated and the baits shipped to American Cyanamid for further evaluation.

National Center for Preservation Technology and Training Studies

Four termite control studies were initiated with grants from the National Center for Preservation Technology and Training sponsored by Dr. Mark Gilberg, Research Coordinator, and under the technical direction of Dr. Nan-Yao Su, Professor of Entomology at the University of Florida in Fort Lauderdale. The historical sites selected for termite control were the Cabildo Museum, the Presbytere Museum, Madam John's Legacy Museum. Perseverance Hall in the Armstrong Park complex, and the surrounding building are not part of Dr. Su's studies. All four building were treated using DowElanco's Sentricon baiting system.

Because of our continuous involvement with the Cabildo and Madam John's Legacy, the personnel at these museums got used to calling us first rather than applying pesticides themselves or calling a pest control operator. This allowed us to conduct baseline counts of the Formosan termite activity with the Acoustic Emissions Detector (AED) prior to placing the baits.

Wood blocks were placed in the courtyard garden of the Cabildo to initiate the determination of wood consumption and population demographics following a protocol designed by Dr. Su (triple-mark-recapture). Using pre-weighed wood blocks, we can monitor the foraging activity (wood consumption rate) of a colony by calculating the amount of wood consumed over time (grams of wood consumed per day), usually over a two or three week period. The termites are collected and a mean body weight determined to calculate the total number of termites collected on the wood block. The termites are then marked by allowing them to feed on filter paper containing Nile blue dye for about

three days or until they are all dyed. The termites are then released back to the site where a new pre-weighted wood block has been placed. The data is summarized and a weighed mean model (Began 1979) is used to estimate the foraging population size and colony size. The wood blocks are also used as controls to determine if the colony activity is being affected by the hexaflumuron delivered by the bait system.

By December it was apparent that the termite colonies were in decline at the Presbytere, Cabildo, and the Perseverance Hall sites. The termites turned milky white and did not feed much compared to when the baits were first installed. At the Madam John's Museum the termites were not interested in the above-ground baits, but the native termites readily attacked the baits.

Cabildo. The Formosan infestation at the Cabildo was limited to the rooms in the courtyard, and also in the floor boards and catwalk of the Creole House (immediately above the courtyard). It was treated with seven below-ground and three above-ground baits stations.

While the triple-mark-recapture study was on-going, the museum personnel urged us to treat the infestation, and it was very difficult to convince them that the information that we were gathering prior to initiating the treatment was necessary for understanding how the baits would affect the colony. While looking for a site to place a small wood block for collecting termites in the Creole House in the Cabildo, a blue Formosan soldier was located in the floor board, which is directly above the courtyard where the wood blocks were installed. Although the odds are very much against finding a dyed termite in a feeding site, this event saved countless hours of work with wood blocks in the Creole House, since now we know that they are the same colony.

As the number of termites decreased in the wood blocks and more bait tubes were consumed, it became apparent to the museum personnel that the baits were affecting the colony. The acid test for any termite treatment is ultimately the lack of swarms in the spring of next year.

Presbytere. At the time that the termite treatment with baits started at the Presbytere Museum, the courtyard in the first floor was drilled and treated conventionally under a prior contract (not related to our studies). Several floor boards in the Bust Gallery on the second floor were severely damaged by Formosan termites and we were able to place above-ground soft baits as part of our current research trials. The AED counts of 600 to 1000 were some of the highest we have obtained in any site in New Orleans. Prior to placement of the bait stations, four to five 1/4 inch holes were drilled into the floor boards to allow the termites quick access to the bait. Eight bait stations were placed in two locations, but due to the visitor traffic coming to the gallery, the baits had to be covered with black plastic sheeting and a area rug. The Formosan termites feed so well on the bait stations that they

abandoned the wood in favor of the baits, and as a result the AED counts dropped to less than 100.

Madam John's Legacy Museum. The Formosan termite colony at Madam John's was located in the second floor of the balcony with no apparent soil contact, and native subterranean termites (*Reticulitermes sp.*) were feeding in the rear section of the museum. The bricks in the courtyard will need be cored and wood placed there to determine if this Formosan colony is aerial or based in the soil.

Five above-ground stations were placed under the balcony where feeding activity was determined with the AED. Both soft and hard stations were used. We don't know why but these Formosan termites did only a very limited amount of feeding on the baits. It may be that this is a small colony with limited resources that prefers to stay close to the main nest.

Three wood blocks were placed in the planters to obtain information on the size of the colony. Only native termites attacked the wood blocks, so no information was obtained on consumption rates or the size of the Formosan colony.

Perseverance Hall. Inspection of the Perseverance Hall building revealed that termites had been present on a maintenance room of the first floor where they destroyed several floor joists, and also on the second floor in the window sills and the floor boards. The interior walls and floors of the Perseverance Hall museum were checked for termite activity using the AED but no feeding activity was defected. We were aware that the building had been spot treated using conventional termiticides (probably PT-270) after termites swarmed during a Smithsonian show.

It was decided that the building would be treated using the Sentricon bait system. Because of limited ground access, the perimeter of the Perseverance Hall building was cored (through the slab) by a concrete coring company under our supervision and the Sentricon stations were installed through the three inch holes. Approximately thirty Sentricon stations were installed around the perimeter of the building through the concrete slab, and about twelve more were installed in the grassy area

Several of the stations were attacked by Formosan termites within a week and after months of baiting, the colony appeared to be weakening as indicated by the sickly looking workers and decrease in the number of attacks on the bait stations.

Sentricon Tree Baiting Study (NOMCB)

The city of New Orleans Trees and Parkway Department oversees and maintains over one million trees which provide the charm and appeal for residents and visitors alike. Many trees have fallen prey to the Formosan termites, including several historical live oaks, so we initiated some pilot studies with the Sentricon baits to try to control termites in infested

trees by placing Sentricon station in the trunk of the tree and around the base of the tree in the soil.

Sentricon stations were placed in the soil in two tree locations (Warrington and Ken Court) where termites were active inside the tree. The wood stakes that were placed surrounding the base of the tree were inspected as time allowed. At both sites it took the termites approximately one month before they started attacking the wood stakes, and in each site only one stake was attacked. Even though the data is very preliminary, it appears that the termites are not foraging at random out of a tree, but rather have foraging "highways". Other wood stakes placed next to the hits were not fed on. The attacked wood stakes were replaced with a Sentricon station and a 0.5% bait tube. The termites from the wood stake were recruited (collected and placed) in the Sentricon station.

Two trees were tested in which Sentricon stations placed inside the tree. Holes were drilled into the trees big enough to fit a Sentricon station, but the termites did not accept them very well. They tended to fill them up with mud as if trying to defend themselves against it. The termites did eventually feed on enough hexaflumuron to have an effect and eliminated them from the tree, but based on the degree of difficulty involved, we do not recommend this procedure.

After several months, the Formosan termites in these four trees consumed several baitubes and became lethargic and milky white. Baiting was initiated in July and by September there was no evidence of live termites either feeding on the baits or present in the trees.

DDD200

We purchased a Decay Detecting Drill (DDD200) from Shannon Technologies to determine whether a tree has decayed wood or if there is a hollow area inside the tree. This instrument operates by spinning a thin, smooth 2 mm diameter by 200 mm long wire with a spoon-shaped tip at 7000 rpm which penetrates the tree and leaves a tiny hole. The operator relies on four LED's to determine the proper continuous pressure to apply while drilling. A chart recorder built into the drill operates at 60 rpm and provides a permanent direct reading of the density of the wood as it is being drilled. Sound wood is recorded on the chart as a series of continuous lines (even drilling pressure), while decayed wood or a hollow is indicated by an increased distance between the lines (less dense resulting in less resistance to the drill). An increment tree core borer was also purchased to compare the chart results of the DDD200 with an actual cross section sample of the tree.

Several trees infested with termites were provided by Larry Christian of Parks and Parkway Department. Several of these trees were drilled with the DDD200 and core

samples obtained to determine the extent of the termite damage. The results indicated that the DDD200 was useful in determining whether the tree contained decayed areas or hollows (limited to 200 mm in depth, or 8 inches) and can be useful in determining if termites have severely weakened the trunks or branches. We did encounter problems drilling into live oaks and water oaks. The resins would build up on the shaft of the drill and prevent further drilling. The only option then was to remove the drill from the tree, clean the drill shaft, replace the chart and continue drilling through the same hole. We used the DDD200 for determining if a tree on city property needs to be removed or not.

City Planning

We assisted Rene Becnel, City Architect, in determining the placement of Sentricon stations in the Golden Age Center on 200 N. Alexander. The building was a fire station that had horse stables in one section of the building. This area will be converted into a ceramic studio. The renovation plans include the installation of Sentricon stations inside the horse stables where new slab will be poured, but it will also require stations to be placed around the perimeter of the property, some of which will require coring through the slab.

We worked in two more renovation projects with Rene Becnel in the placement of Sentricon stations. One building located at 518 Mandeville is a large wooden structure that appears to have been a fire station. This building will require coring of the slab for all the stations since there is no exposed soil. The other building was the Stalling gymnasium on 4300 St. Claude Ave. This facility has mostly soil surrounding the structure, but some of the stations will have to be cored through the slab. About 15 stations will be placed inside the building once the renovation is under way and the damage to the floor and walls is more evident.

We also assisted Larry Yohn, Management Chief of the New Orleans Recreation Department, in writing the specifications for bidding the treatment of a building in the Village De L'Est recreation park. We had received a request from him back in the spring to inspect the building and we had found several areas where the Formosan termites had been active and had severely destroyed part of the building.

Complaints

Complaints were received from city-owned building as well as from private homes. The city-owned buildings were inspected, but on privately-owned buildings we could only provide information or suggest that they consult the yellow pages for a reputable, licensed pest control operator.

We designed a form for logging termite calls using a template similar to the mosquito

complaint form. Now that more residents are aware that the New Orleans Mosquito Control Board is conducting control trials with baits, we have had several requests for information or for termite inspection in structures and in trees. By logging this information in a computer database, we have immediate access to inspection data and sites and can more easily search this information.

Tours

Because of the special way in which we have approached treating buildings with baits in the French Quarter, we have gained international attention in the termite arena. We are also working in collaboration with well known and respected termite experts such as Dr. Joe Mauldin, former director of the Southern Forest Experiment Station, USDA, in Gulfport, Mississippi, and Dr. Nan-Yao Su of the University of Florida at Ft. Lauderdale.

A visit to several of the baiting sites was also prepared for a DowElanco tour consisting of the Sentricon System marketing and research and development executives. Mr. Ed Bordes delivered a slide presentation to demonstrate why New Orleans is the ideal location for Formosan termites and how we plan to fight them. Sites visited included the middle shop bathroom and the conference room at NOMCB, a baited tree, a fire station, the Vieux Carre Commission building, the Presbytere Museum, Madam John's Legacy Museum, Jackson Square and the Upper Pontalbas. It was very enlightening for the DowElanco executives to see how their product is being used in difficult areas such as the French Quarter. Seeing the sites also helps to understand why some modifications may be required to make the baits easier to install, use, and to design better tamper proof station housings.

Joe Mauldin brought two international guests, Warwick Lucas of Australia, and Kazuma Yamauchi of Tokyo, Japan. Both of these gentlemen are the product managers of Dow's Sentricon baiting system in their respective countries. They were interested in seeing our baiting efforts, especially our below-the-slab delivery system for baits in the French Quarter.

Marketing specialists from American Cyanamid visited us on November 18th to gain a better understanding of the termite problem in New Orleans and to determine how their product could address the situation. A tour of the test sites was organized by Dr. Byron Reid, Product Development Manager for American Cyanamid. The tour included Air Reldan flight school, the FINK study site in Algiers, the French Quarter, Lafayette Square, and a termite infested tree that had been treated with their experimental liquid termiticide.

Dr. Mark Gilberg of the National Center for Preservation Technology and Training (US Department of the Interior, National Park Service) approved the grant for treating the Perseverance Museum and was very impressed with our work with the Sentricon bait system.

We also gave a tour of our research sites to the Georgia state pest control regulators since they had never seen serious Formosan termite damage in buildings.

Bait Port Caps

The bait port cover was designed to place Sentricon bait stations in the French Quarter where there is very little, if any, accessible soil. Over the years the design was modified and improved, originally hand made in-house. All the components are now manufactured to our standards to provide a professional-looking, long-lasting and serviceable cover for three inch diameter holes cored through the slab. These covers are being used by Mosquito Control at the Pontalbas apartments, Gallier Hall and the New Orleans Courthouse on Tulane and Broad. Because Mosquito Control owns the patent for this design, these covers are in high demand and we have received orders from as far a Hawaii and Japan .

The covers allow easy access to the Sentricon stations placed below the slab, and they also provide a water and light-tight seal. The snake eye screw is almost impossible to turn without the proper screwdriver bit, thus preventing tampering. This feature is very important because most of the bait stations are located below the sidewalk.

The price of each cover is $10.00, the special screwdriver tips are $2.00 each, and the screwdriver handle is $10.00. The shipping and handling costs are added to each order.

Termites in 1997

The Termite Division will continue to assist DowElanco in the experimental use permit (EUP) program in the French Quarter. More city buildings with termite infestations will be inspected to test their products, and plans are under way to bait entire squares starting with the Pontalbas square and the St. Louis Cathedral square.

Other companies have approached us for sites to test their products in structures and trees, and we are committed to American Cyanamid to treat more trees and uninhabited structures to test their liquid termiticide.

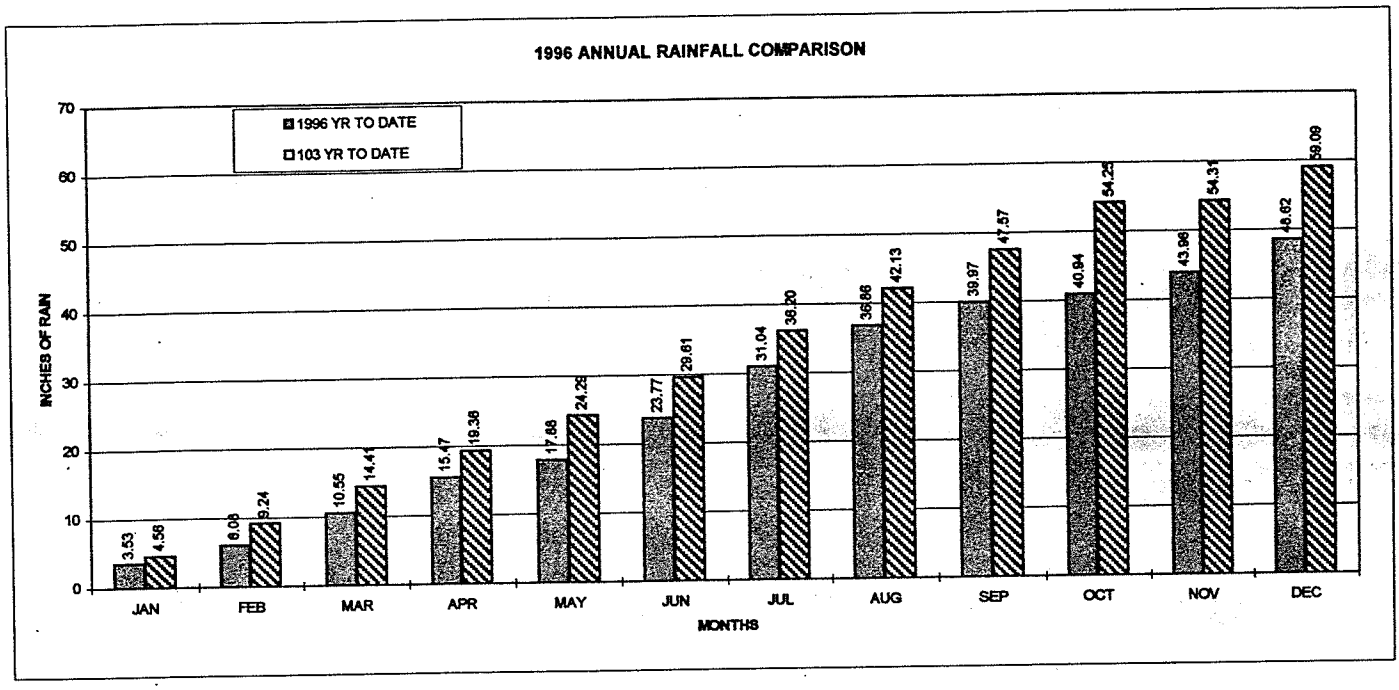
The real test for 1996 studies will be in May of 1997 when the termites begin their annual swarming rituals. We will be closely watching those buildings where we have eliminated the termites, such as the Algiers Regional Library, New Orleans Mosquito Control middle shop, the Nature Center, the Vieux Carre building and the Gallier Hall building.

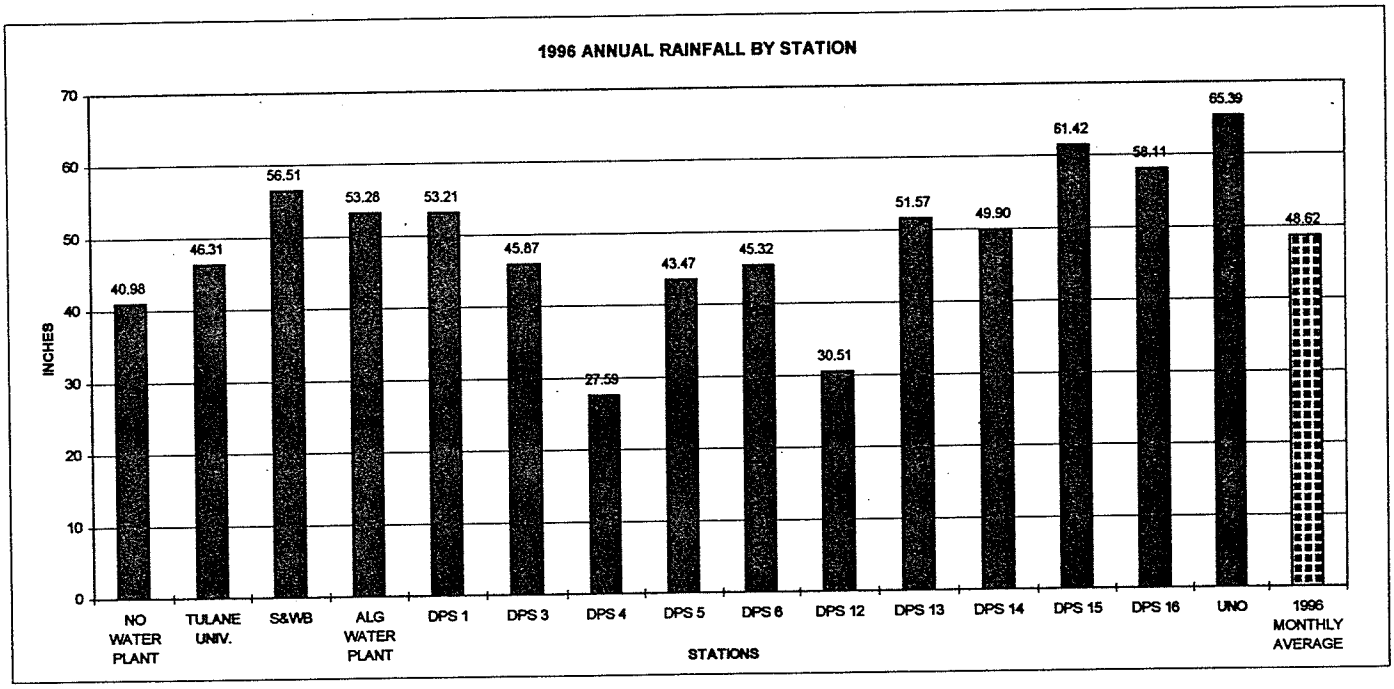
We will also try to attend the termite meetings to stay abreast of the latest in termite treatment and detection technology to provide the city of New Orleans with the most innovative termite control program possible.

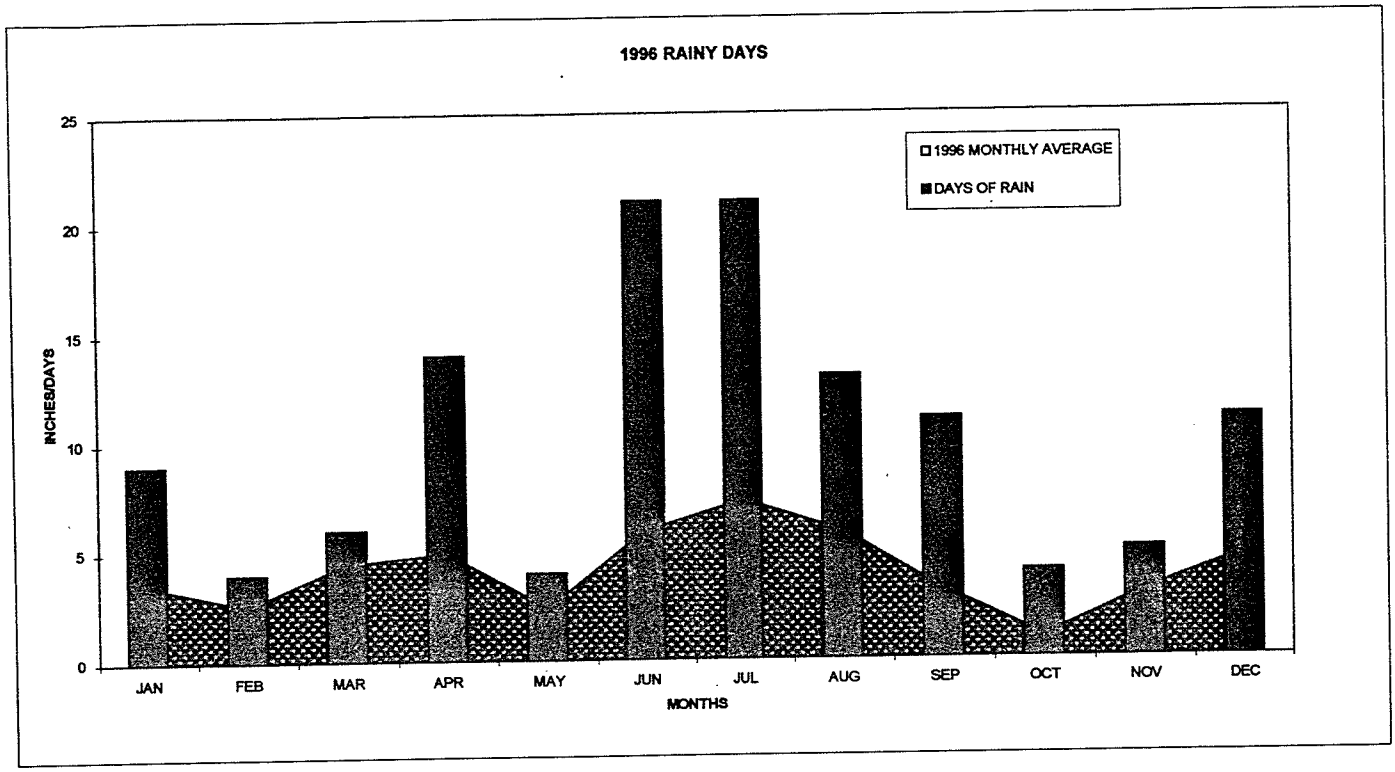
NEW ORLEANS RAINFALL CHART

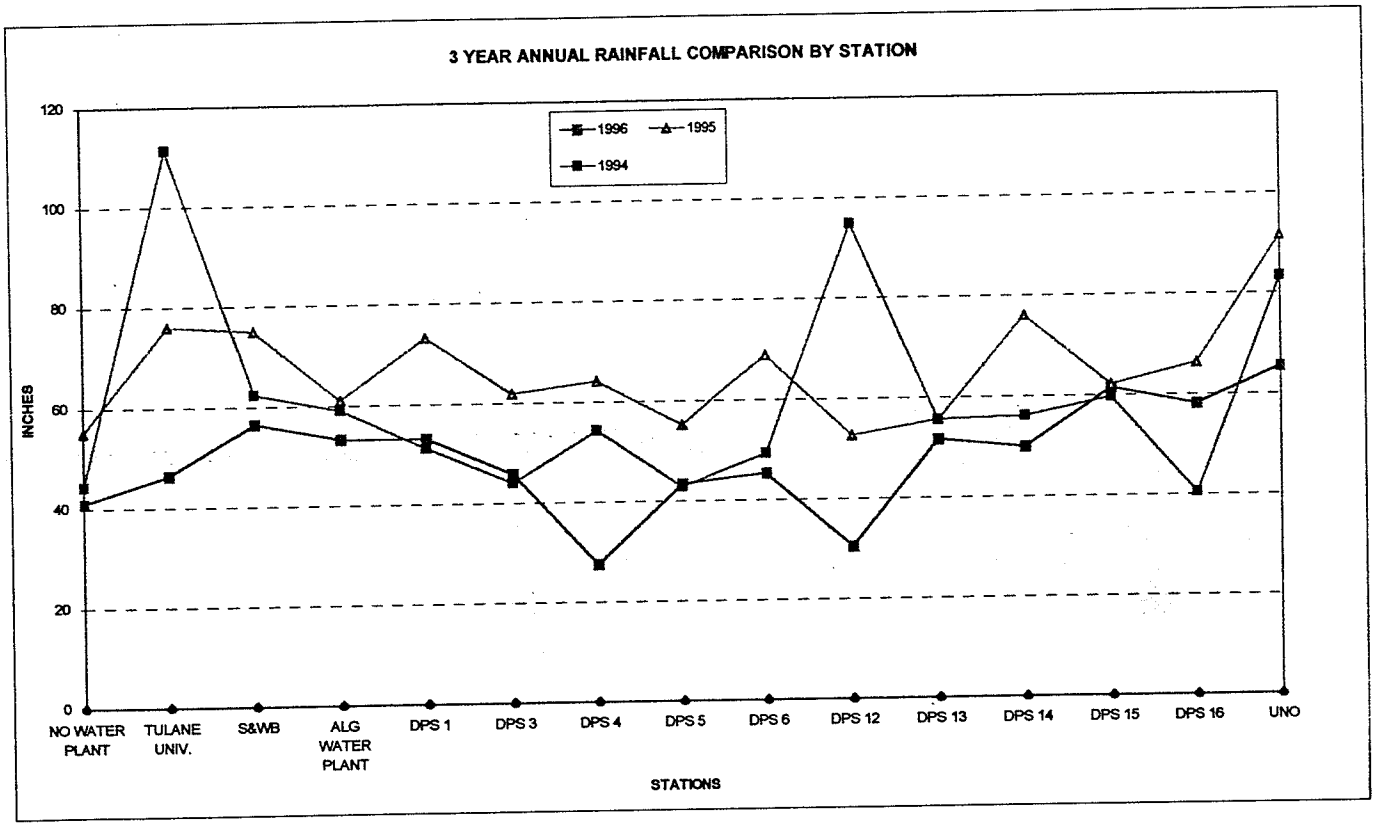
STATIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1996	AVG
NO WATER PLANT	2.38	1.83	2.97	2.42	1.90	2.32	8.04	5.30	2.34	0.63	2.69	8.16	40.98	3.42
TULANE UNIV.	3.88	0.52	3.50	4.27	3.87	3.89	7.98	5.27	2.22	0.92	2.99	7.00	46.31	3.86
S&WB	3.78	2.50	3.55	6.51	4.39	7.78	7.43	6.83	3.00	0.90	3.81	6.03	56.51	4.71
ALG WATER PLANT	3.77	2.45	3.73	8.04	4.14	8.74	5.92	6.04	1.92	0.71	2.63	5.19	53.28	4.44
DPS 1	4.19	3.80	4.70	5.58	2.95	4.94	8.02	5.80	2.95	0.48	3.53	6.27	53.21	4.43
DPS 3	4.08	3.57	3.63	3.37	2.65	4.16	6.05	5.84	2.71	1.34	3.17	5.30	45.87	3.82
DPS 4	3.24	1.39	1.36	2.75	0.66	3.18	1.76	2.64	3.56	0.10	3.03	3.92	27.59	2.30
DPS 5	3.20	1.33	3.66	4.51	2.17	5.01	5.25	6.55	3.57	1.18	2.28	4.76	43.47	3.62
DPS 6	4.52	3.16	3.92	3.12	0.76	3.57	8.78	4.25	3.83	1.52	1.86	6.04	45.32	3.78
DPS 12	3.82	1.32	4.13	1.40	0.93	4.16	5.70	1.90	2.08	0.34	1.65	3.08	30.51	2.54
DPS 13	4.38	3.76	3.06	4.38	4.29	7.53	4.70	6.42	4.12	0.68	1.20	7.05	51.57	4.30
DPS 14	2.80	0.85	7.37	5.45	1.68	4.84	11.84	4.83	2.53	0.87	3.50	3.34	49.90	4.16
DPS 15	0.00	3.85	6.71	12.04	1.75	12.59	9.54	6.76	3.50	1.25	3.43	0.00	61.42	5.12
DPS 16	3.95	3.81	5.93	4.50	1.41	6.65	11.47	8.43	3.26	1.06	3.87	3.77	58.11	4.84
UNO	4.98	4.09	8.84	5.51	2.54	9.13	6.59	10.42	5.09	2.51	5.69	0.00	65.39	5.45
1996 MONTHLY AVERAGE	3.52	2.55	4.47	4.92	2.41	5.90	7.27	5.82	3.11	0.97	3.02	4.66	48.62	4.05
1996 YR TO DATE	3.53	6.08	10.55	15.47	17.88	23.77	31.04	36.86	39.97	40.94	43.96	48.62	48.62	4.05
103 YR AVG/MTH	4.56	4.68	5.17	4.95	4.93	5.34	6.56	5.93	5.44	3.13	3.60	4.78	59.07	4.92
103 YR TO DATE	4.56	9.24	14.41	19.36	24.29	29.61	36.20	42.13	47.57	54.25	54.31	59.09	59.07	4.92
1995 MONTH AVERAGE	3.52	4.96	9.79	5.17	20.91	1.98	7.67	2.99	1.20	2.05	2.99	3.60	66.83	5.57
1994 MONTH AVERAGE	3.22	0.43	5.14	1.44	6.21	7.88	9.14	4.00	7.00	3.27	2.40	3.75	53.88	4.49
DAYS OF RAIN	9.00	4.00	6.00	14.00	4.00	21.00	21.00	13.00	11.00	4.00	5.00	11.00	123.00	10.25

STATIONS	**LOCATIONS**
N.O. Water Plant	8801 Spruce St.
Tulane University	8623 St. Charles Ave.
Sewerage & Water Bd	625 St. Joseph St.
Algiers Water Plant	1120 Elmira St.
D.P.S. No. 1	2501 S. Broad St.
D.P.S. No. 3	2251 N Broad Ave.
D.P.S. No. 4	5700 Warrington Dr.
D.P.S. No. 5	4841 Florida Ave.
D.P.S. No. 6	345 Orpheum st.
D.P.S. No. 12	7223 Ponchartrain blvd.
D.P.S. No. 13	4201 Tall Spruce Dr.
D.P.S. No. 14 (Jahncke)	12200 Hayne Blvd.
D.P.S. No. 15	Gulf Intracoastal Waterway
D.P.S. No. 16 (St. Charles)	7200 Wales St.
U.N.O.	Univ. of New Orleans Lakefront


1996 ANNUAL RAINFALL COMPARISON
1996 YR TO DATE
103 YR TO DATE
INCHES OF RAIN
70
60
50
40
30
20
10
0
3.53
4.58
6.08
9.24
10.55
14.41
15.47
18.38
17.88
24.29
23.77
29.61
31.04
38.20
38.66
42.13
39.97
47.57
40.84
54.25
43.96
54.31
48.62
59.09
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
MONTHS


1996 ANNUAL RAINFALL BY STATION
INCHES
70
60
50
40
30
20
10
0
40.98
46.31
56.51
53.28
53.21
45.87
27.59
43.47
45.32
30.51
51.57
49.90
61.42
58.11
65.39
48.62
NO WATER PLANT
TULANE UNIV.
S&WB
ALG WATER PLANT
DPS 1
DPS 3
DPS 4
DPS 5
DPS 6
DPS 12
DPS 13
DPS 14
DPS 15
DPS 16
UNO
1996 MONTHLY AVERAGE
STATIONS


1996 RAINY DAYS
1996 MONTHLY AVERAGE
DAYS OF RAIN
INCHES/DAYS
25
20
15
10
5
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
MONTHS


3 YEAR ANNUAL RAINFALL COMPARISON BY STATION
1996
1995
1994
INCHES
120
100
80
60
40
20
0
NO WATER PLANT
TULANE UNIV.
S&WB
ALG WATER PLANT
DPS 1
DPS 3
DPS 4
DPS 5
DPS 6
DPS 12
DPS 13
DPS 14
DPS 15
DPS 16
UNO
STATIONS