

ANNUAL REPORT



TO THE CITY OF NEW ORLEANS DEPARTMENT OF HEALTH



RODNEY C. JUNG, M. D. , PH. D.
DIRECTOR OF HEALTH

JOHN H. RIEMER
DEPUTY DIRECTOR

CITY OF NEW ORLEANS
HEALTH DEPARTMENT
CITY HALL BUILDING - CIVIC CENTER

MOSQUITO CONTROL PROGRAM

TEL. 283-1663

GEORGE T. CARMICHAEL
MOSQUITO CONTROL ADMINISTRATOR

ADVISORY COMMITTEE

GEORGE M. HOWARD, CHAIRMAN
HARRY BATT
LESTER J. LAUTENSCHLAEGER
EDWARD F. LEBRETON, JR.
H. T. SHALETT
RODNEY C. JUNG, M.D., PH.D.
DANIEL L. KELLY

ANNUAL REPORT
OF THE
ORLEANS PARISH
MOSQUITO CONTROL PROGRAM
1965

ANNUAL REPORT 1965

The year of 1965 represented the first complete year of operation for the Mosquito Control Program in the City of New Orleans Health Department. The headquarters were established in 1964 in temporary quarters on the site of Camp Leroy Johnson on the lakefront in New Orleans. The first year was largely devoted to staffing and training personnel and the establishing of the control efforts simultaneously. The accomplishments obtained during the year are a result of the efforts of many people working toward a common goal.

The Orleans Parish Mosquito Control Program is a function of the Department of Health of the City of New Orleans. A Mayor's Advisory Committee on Mosquito Control operates as a policy advisory committee and meets each month to review the progress of the program and to make recommendations on policy matters. The normal reporting consists of a monthly report presented to the Advisory Committee, in which the activities of the control operation is detailed, as well as an expenditure report.

The highlight of the training process occurred on May 24 - 27th, when a four-day training course was conducted in the State Office Building in cooperation with the Louisiana Mosquito Control Association and the United States Public Health Service. A total of sixty-four (64) students and lecturers attended the course on "Mosquito Control," and it provided a boost for mosquito control in the area.

An Open House was held on July 6, 1965, at the temporary headquarters and the City officials were invited to review the equipment and the progress of the program. The television, radio and newspapers were invited, and a good press coverage was received.

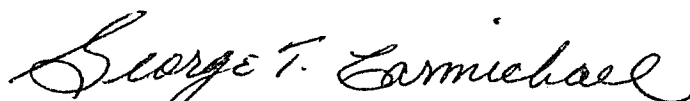
An Encephalitis Surveillance Program was carried on throughout the year, and a detailed report of this work is included in this report.

The use of a helicopter for marsh inspection greatly aided the control work and provided information which could

have been obtained no other way. The helicopter is rented on an hourly basis from Louisiana Helicopter Sales and has proven extremely satisfactory since our temporary quarters would not permit our purchasing our own helicopter.

September 9, 1965, Hurricane "Betsy" hit the New Orleans area with the most devastating disaster ever to be recorded in the Gulf Coast region. The aftermath resulted in an immediate decrease in all species of mosquitoes, but a gradual build up of Culex salinarius plagued the area throughout the winter. The control efforts were used to combat the fly problem immediately after the hurricane.

The City appointed an architect to design the new headquarters for the Control Program, and the Orleans Levee Board provided an acre and a half on the Lakefront Airport for the permanent facilities.



George T. Carmichael
Mosquito Control Administrator

ENTOMOLOGICAL REPORT FOR THE YEAR 1965

The common denominator shared by all mosquitoes, regardless of genus or species, is the aquatic stage. All mosquitoes require water in their immature stages, thus a primary concern of any mosquito control program is the gathering of data regarding the main sources of water that may be available to mosquitoes, i.e., tide and rainfall. Since tidal fluctuation in Louisiana is minimal, our first concern is rainfall. During 1965 the Bureau installed 60 rain gauges in strategic locations throughout the Parish. These gauges were located on private property, and individuals were asked to cooperate by reading the gauge each day. Rainfall in excess of 0.5 inch was reported by telephone, and weekly reports were made by postcards provided by the Bureau. The main purpose of this program was to establish as soon as possible where the heaviest rainfall occurred so that inspection could be concentrated in that area. Cooperation to date has been most encouraging; of the 60 gauges established, an average of 75% to 80% made complete reports each week.

Inspection based on rainfall data is the essence of good mosquito control. The inspection-mapping phase of the program completed more than 38,000 acres of previously uninspected areas in approximately 2,000 man-hours during 1965. The bulk of the work was accomplished east of the Industrial Canal. Mapping during the early months of 1965 was recorded by freehand sketches; this, of course is time consuming and not entirely accurate. However, in April aerial photographs were obtained and efficiency increased by 56% during the first month of use.

In addition to conventional inspection, which is accomplished on foot, the Bureau initiated in July the use of a helicopter on a contractual basis for inspection work. In the months that followed, the helicopter was used for a total of 32 hours. This inspection technique was used in areas inaccessible by foot or in situations following heavy rainfall which had flooded vast acreages of marshland. The helicopter was equipped with pontoons, which made it possible to land on flooded areas and to determine whether these areas contained mosquito larvae. Use of the helicopter helped realize an economy in man-hours required to inspect a given area and, what is more important, a speed up in the time required to locate and report breeding situations for treatment. Several broods, including one major brood of salt marsh mosquitoes, were located in 1965 with the aid of this device, and subsequent treatment averted the completion of their life cycle.

The location of adult mosquitoes in the Parish was determined from data obtained from New Jersey light traps and landing rate counts. The 23 light traps utilized in 1965 were, in general, located in the same areas as in 1964. These traps were operated by volunteers on Monday and Thursday nights. Individual light traps had associated with them 3 landing rate stations for a total of 66 stations. Each Tuesday and Friday morning when inspectors picked up light trap collections, 3 landing rate counts were made at each station, giving a total of 198 counts per collection day.

Adult mosquitoes identified during the year numbered 408,238, and required 238 man-hours of taxonomic work. In one year's operation a total of 1,955 light trap collections were made, accompanied with 13,543 landing rate counts. Travel logged during these operations amounted to approximately 13,300 statute miles (roughly 3 times the distance across the United States). Breakdown of light trap collection data is given in Table I in the form of average number of adult females collected per trap night. The Zones referred to in Table I are the same as established in August of 1965 and are listed in Figure 1.

As indicated, the bulk of the mosquitoes was confined to the outlying Zones of the Parish. The Chef Menteur-Lake St. Catherine Zone showed the greatest adult mosquito density, followed by South Shore-Michoud. Both of these Zones are relatively unpopulated; mosquitoes confined to these areas caused little concern to the major population of Orleans Parish. The Algiers Zone ranked third in adult density in 1965, however, most of the mosquitoes collected there were contributed by Trap No. 1, which is located in an unpopulated area. Traps Nos. 2 and 3 in this Zone yielded relatively few mosquitoes (see Table II). The remaining 3 Zones showed low adult mosquito density throughout the year. These are the Zones in which the bulk of the population of Orleans Parish is housed and are considered our primary control zones.

Figure 2 illustrates the average number of females collected per trap night on a monthly basis. The peak exhibited by all species in June indicates the importance of rainfall patterns to mosquito breeding. Prior to May, drought conditions prevailed throughout the Parish and mosquito collections were relatively low. The advent of rains in May initiated an upward swing in the mosquito population. Throughout June rains were intermittent and, therefore, ideal for breeding. July and August experienced relatively constant rains, which is not optimum for salt marsh mosquito breeding. Hurricane Betsy caused the flooding of vast acreages of marshland, and the result of this flooding is indicated by the steep upswing in Culex species. Lower temperatures is a probable answer for the decrease in other species during the same time interval.

Larviciding activities during 1965 made use of both Paris green and diesel oil as toxicants. The former was applied at the rate of 15 pounds per acre in both ground and aerial operations. Ground application of Paris green was accomplished through the use of hand-operated bellows dusters. This device was used in areas too small for aerial treatment and inaccessible to larviciding trucks. This type of application was initiated in the latter part of the year, when shipment of the equipment was received. A total of approximately 640 pounds of Paris green was distributed using this technique.

Ground larviciding with diesel oil was accomplished with the Bureau's two larviciding trucks. Each of these 4-wheel drive, 3/4 ton trucks is equipped with a 360-gallon tank and a 200-foot hose on a power reel. These vehicles were put into operation in June and dispersed 2,814 gallons of diesel oil.

In the latter part of June, the Bureau put its airplane on an operational status. The craft is a Piper Pawnee 235, equipped with spray booms and a swathmaster spreader. It was determined that Paris green delivered at a rate of 15 pounds per acre distributed itself in a 50-foot swath. Operations with this plane were carried out only over unpopulated areas of the Parish because of single engine restrictions. Approximately 46,900 pounds of Paris green were applied in 3 months of operation, the bulk of this work being carried out in August with the dispersal of more than 26,000 pounds.

Adulticiding operations were likewise carried out by both ground and aerial application of toxicants. Ground adulticiding was accomplished by the Bureau's 7 fog trucks; this operation is discussed in greater detail in the enclosed Fogging Report for 1965. In aerial operations, a 2% mixture of Malathion and diesel oil was applied at the rate of 3 quarts per acre. Initial testing of the effectiveness of this application technique indicates a 95% reduction in the number of adult mosquitoes one hour after treatment. Aerial adulticiding applied 7,565 gallons of Malathion mixture to areas showing a high concentration of adults.

In May steps were taken to inaugurate an Encephalitis Surveillance Program; 81 resting stations were established where mosquitoes are likely to rest during the daylight hours. Sampling of these stations was undertaken on two occasions. The Encephalitis Surveillance Program came into full swing in July with the use of 12 CDC light traps. These are portable light traps that collect live mosquitoes for laboratory study. The adult mosquitoes collected were frozen, then identified and forwarded to the State Board of Health, where they were tested for encephalitis viruses.

In December the efforts of the Surveillance Program were expanded to include the collection of blood samples of migratory birds. A Federal Scientific Collecting Permit was obtained before this phase of the Program was begun. Specimen samples obtained

were likewise processed by the State Board of Health. No encephalitis virus has been identified in either mosquito or blood specimens tested.

In addition to its regular duties, the Bureau undertook the control of fly larvae for a period following Hurricane Betsy. Two larviciding trucks were fitted with special spray nozzles to produce a "fan" pattern. The airplane was also converted for fly control work with the installation of mini-spin nozzles. A Buffalo turbine was obtained on a rental basis and also put into operation. A total of 1975 gallons of Dibrom and 60 gallons of Malathion were dispersed in this fly control effort.

Also in the area of extra curricula work, the Program was charged with the identification of spiders following public concern of the possible presence of the brown recluse spider in the Parish. None of the collections received for identification contained this arachnid.

MOSQUITO SURVEY AREAS ORLEANS PARISH, LOUISIANA

Fig. 1

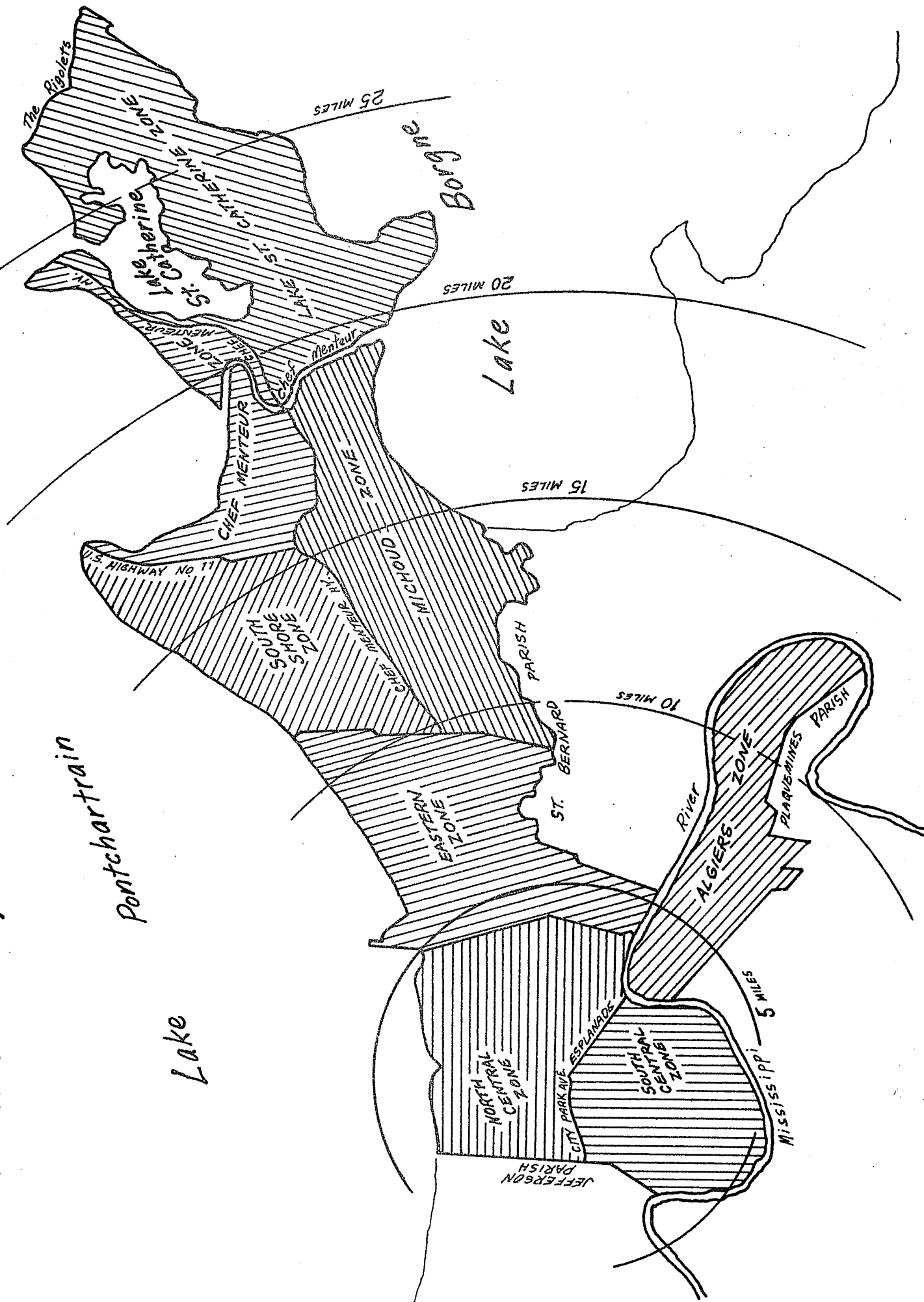


TABLE I
Average number of adult females collected per trap night per zone,
Orleans Parish, Louisiana, 1965

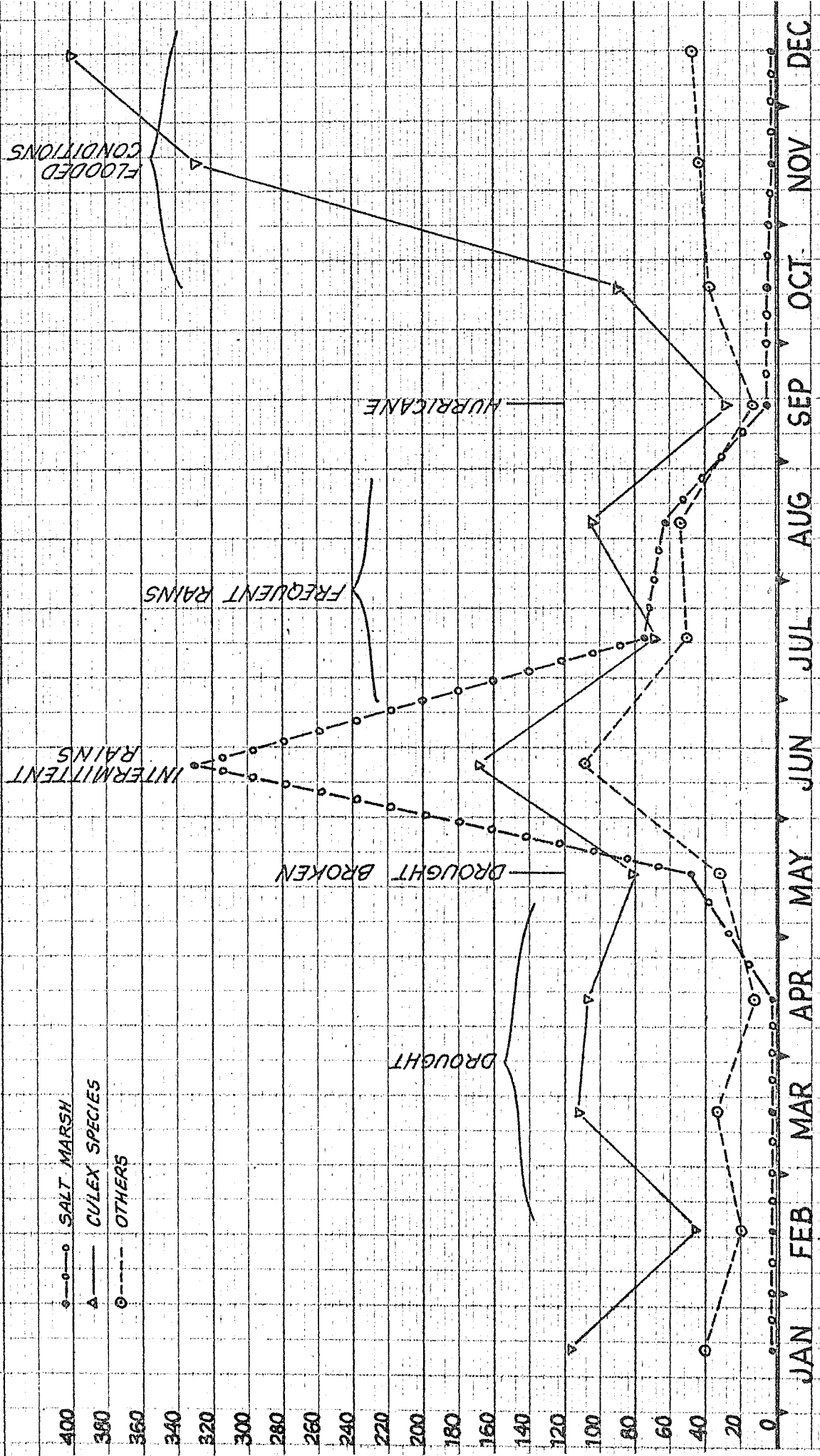
Zones	Number Collections/Average											Total 1965	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.		Dec.
Algiers	19/ 162	24/ 64	20/ 132	14/ 301	20/ 336	19/ 898	27/ 276	26/ 314	15/ 388	23/ 110	23/ 291	18/ 181	248/ 13
S. Central	20/ 35	27/ 4	30/ 3	31/ 7	28/ 7	29/ 23	29/ 10	26/ 23	15/ 25	22/ 43	22/ 45	18/ 88	297/ 1
N. Central	24/ 37	28/ 8	27/ 5	27/ 9	30/ 27	17/ 56	26/ 20	22/ 28	16/ 35	20/ 36	20/ 46	13/ 74	270/ 1
Eastern	18/ 67	21/ 21	28/ 20	21/ 15	19/ 99	29/ 223	31/ 99	29/ 105	18/ 218	27/ 123	28/ 406	23/ 316	292/ 5
S. Shore- Michoud	23/ 453	21/ 137	17/ 418	25/ 466	25/ 212	24/ 1441	23/ 406	24/ 583	10/ 107	25/ 195	23/ 1222	18/ 959	258/ 25
Chef. Ment.-21/ L. St. Cath.	235	18/ 189	19/ 637	21/ 201	23/ 286	18/ 1465	18/ 566	21/ 718	10/ 488	21/ 165	25/ 792	16/ 663	231/ 27

Predominant Species

A 73% A 66% A 75% A 90% A 48% B 53% A 36% A 44% A 59% A 64% A 86% A 87%
C 15% C 24% D 20% D 5% B 29% A 27% B 35% B 26% B 10% E 7% D 6% C 8%

A - Culex salinarius
B - Aedes sollicitans
C - Culiseta inornata
D - Anopheles crucians
E - Psorophora confinnis

Fig. 2 Average number of females collected per trap-night; Orleans Parish, Louisiana



SURVEY OPERATIONS FOR 1965

Light trap operations (Apr.-Dec.)

1,955 light trap collections	
544.4 man hours	\$ 1,185.72
7,387.5 miles traveled @ 3¢ per mile	<u>221.63</u>
Cost of light trap collections	1,407.35

Landing rate counts (Apr.-Dec.)

13,543 landing rate counts made	
508.1 man hours	170.19
5,964 miles traveled @ 3¢ per mile	<u>178.92</u>
Cost of landing rate counts	349.11

CDC light trap operation (July-Dec.)

93 light trap collections	
187.5 man hours	547.13
3,040 miles traveled @ 3¢ per mile	<u>91.20</u>
Cost of light trap collections	638.33

Identification of mosquitoes (Apr.-Dec.)

408,238 mosquitoes identified	
238 man hours	<u>760.03</u>
Cost of mosquito identification	760.03

Mapping & field survey (Apr.-Dec.)

38,144 acres mapped	
2,009.3 man hours	5,153.62
8,092 miles traveled @ 3¢ per mile	242.76
32.1 hours helicopter use	<u>2,296.48</u>
Cost of mapping & field survey	7,692.86

Survey Operations for 1965 (Cont'd)

Use of aircraft (July-Dec.)

145.5 man hours loading or flagging	378.49
952 ground miles @ 3¢ per mile	28.56
119.3 hours flying @ \$7.50 per hr. Pilot cost	894.75
7565 gals. adulticide @ 20¢ per gal.	1,513.00
46,918 lbs. Paris green pellets @ 11¢ per lb.	5,160.98
Cost of aircraft use	<u>7,975.78</u>

Ground larvicide (Sept.-Dec.)

567 man hours	1,127.87
2,933 mi. @ 3¢ per mile	87.99
2,814 gal. #2 diesel oil @ 10¢ per gal.	281.40
641 lbs. Paris green pellets @ 11¢ per lb.	70.41
Cost of ground larviciding	<u>1,567.67</u>

Fly control (Sept.-Oct.)

76.5 man hours	169.25
326 miles traveled @ 3¢ per mile	9.78
1,975 gal. Dibrom @ 32¢ per gal.	632.00
60 gal. 50% Malathion @ \$2.52 per gal.	151.20
50 hrs. rent of Buffalo turbine @ \$7.00 per hr.	350.00
Cost of fly control	<u>1,312.23</u>

Rain gauge operation (Apr.-Dec.)

60 rain gauges installed	
214 man hours rain gauge maintenance	505.85
1,663 miles traveled @ 3¢ per mile	49.89
Cost of rain gauge operation	<u>555.74</u>

Survey of resting stations (May-July)

162 resting stations inspected	
48.8 man hours	146.03
341 miles traveled @ 3¢ per mile	10.23
Cost of survey of resting stations	<u>156.26</u>

General office work (Apr.-Dec.)

1,441 hours general office work	4,057.89
Cost of office work	<u>4,057.89</u>

ORLEANS MOSQUITO CONTROL

YEARLY LIGHT TRAP TABULATION

DATE 1965

LOCATION	TOTAL		AEDES		ANOPHELES		CULEX		CULIS.	MANS.	PSOR.	OTHER		OTHER		
	MALE	FEMALE	SOLL.	TAEN.	VEX.	CRUC.	QUAD.	QUIRK.	SALIN.	INOR.	PERT.	CONF.	SPP.	SPP.	SPP.	NO. COL
1 - LOWER ALGRS.	1963	54839	74/3204	0/396	60/3489	69/3106	0/331	18/12	1676/33429	54/2190	0/37	9/2003	0/17	0/17		91
2 - MIDDLE ALGRS.	679	7452	1/274	0/5	22/364	1/89	0/66	8/5	619/672	23/408	0/4	3/26	1/21	0/0		81
3 - UPPER ALGRS.	508	3423	6/179	0/8	81/317	0/82	0/13	34/19	370/2028	3/370	0/3	10/391	4/6	0/7		76
4 - IRISH CHANN.	304	223	0/12	0/0	44/280	4/19	1/10	69/43	175/497	0/92	0/7	1/9	3/7	7/17		90
5 - AUDUBON	111	387	3/9	0/2	7/60	11/37	4/11	22/24	58/203	2/19	2/10	0/4	1/4	1/4		58
6 - LAKEWOOD	329	2066	8/337	0/1	60/323	0/45	0/2	50/79	196/910	5/267	1/19	1/20	8/2	0/1		55
7 - EAST END	207	1218	1/43	0/0	68/250	4/44	0/1	0/2	120/715	3/110	0/0	1/53	1/5	0/3		47
8 - L.S.U.NQ.	192	1430	10/374	0/3	56/273	4/34	0/2	3/3	113/611	3/104	0/4	0/0	0/9	2/10		94
9 - CITY PARK	229	1528	10/368	0/1	34/283	6/47	0/7	18/42	147/567	0/37	0/3	11/69	3/4	0/0		74
10 - VIEUX CARRE	902	2365	19/166	0/0	70/289	1/63	0/3	76/101	703/1499	2/206	0/1	17/54	6/16	8/17		94
11 - CAFFIN	794	2576	4/162	0/24	44/233	11/57	0/5	23/77	695/1777	4/132	0/0	0/94	13/7	0/8		61
12 - GENTILLY E.	698	3859	14/580	3/64	97/940	86/429	1/30	11/8	290/1272	12/356	0/7	1/18	7/17	2/13		64
13 - N.O. AIRPORT	1660	5813	4/267	0/47	180/1010	37/596	4/52	41/532	866/2964	5/255	1/5	2/59	61/51	0/11		86
14 - LITTLE WOODS	3439	8629	214/2451	6/195	11/853	605/2823	36/382	53/52	2578/18678	59/958	0/44	4/333	48/16	4/27		72
15 - VILLAGE D'EST	1038	2600	9/175	2/9	25/213	36/254	1/10	0/1	946/1757	12/152	0/0	1/13	1/5	5/11		71
16 - BIENVENUE	1171	7337	171/4265	34/76	40/164	80/1314	0/13	76/51	734/1282	39/99	0/8	0/80	0/38	0/19		43
17 - MICHOU	2320	47319	53/8778	0/684	160/2188	254/6510	0/556	0/257	1757/26855	0/873	0/49	0/232	0/2	96/235		56
18 - POWERS JCT.	1040	37099	0/10525	0/214	20/220	66/2633	0/0	0/0	937/22700	15/634	1/104	0/0	1/21	0/37		78
19 - SOUTH SHORE	1033	54437	65/6845	0/248	6/199	94/2974	16/402	0/0	801/42319	42/1297	0/6	0/122	8/20	1/5		81
20 - CHEF MENTEUR	493	22316	180/6879	0/232	2/207	36/2691	0/8	8/32	257/11122	10/611	0/0	0/76	0/8	0/450		73
21 - GREENS DITCH	1297	52745	250/7449	0/164	44/694	350/11220	0/58	0/0	597/30204	51/1387	0/1	1/231	4/20	0/317		62
22 - RIGOLETS	3901	43771	2403/14822	192/530	4/66	214/2920	0/17	12/54	1035/22886	20/2057	1/7	8/76	8/87	4/249		86
23 - Leroy Johnson	315	3526	24/629	0/4	34/237	2/45	0/6	0/12	223/1615	36/975	1/15	0/5	5/10	0/43		55
Per cent ♀			20%	0.1%	3%	10%	0.7%	0.3%	63%	3%	0.09%	0.1%	0.01%	0.06%		
TOTAL	24813	362608	3523/74853	237/2897	1180/13352	1971/38037	63/2685	522/1406	15902/231812	397/13589	7/335	70/3996	186/401	130/2501		

FOGGING REPORT FOR THE YEAR 1965

During 1965 the Orleans Parish Mosquito Control utilized six 2-wheel drive Ford trucks mounted with Tifa 100-E fogging machines. Each of these trucks is also equipped with one 280-gallon insecticide tank and one 53-gallon propane tank. In mid-summer, a 4-wheel drive Ford truck with the same equipment was purchased to be used on levees and other outlying areas. Each truck can fog for 6 consecutive hours without additional insecticide and 12 consecutive hours without adding propane. The Tifa fogging machines operate at a burner temperature of 1000° F. and formulation pressure of 25 psi. The fogger engine operates at 2200 rpm, and the machine is most effective when operated at air temperatures of 65° or above. It can be used effectively in winds up to 9 miles per hour, but better average kills are obtained at higher temperatures and at wind velocities of about 5 miles per hour. The instrument panel inside the cab of the truck enables the driver to carry on all fogging operations without getting out of the truck. A flow meter shows the exact amount of insecticide being dispersed.

The fog mix consists of 3 gallons and 7 pints of technical Malathion (95%), 1-1/2 quarts of Thiasperse (sludge inhibitor) and No. 2 Diesel oil to make 100 gallons. With this formulation, the machine is set to deliver 40 gallons per hour over a swath width of one city block (350 feet) and at a truck speed of 5 miles per hour.

Early in the season the trucks had to be used every night, and thus a complete coverate of the City was obtained. In August the Parish was divided into zones according to geographical location:

Eastern Zone includes the area east of the Industrial Canal.

North Central Zone is all area north of City Park and Esplanade Avenues.

South Central Zone is all area south of the above Avenues.

Algiers Zone consists of all parts of the Parish across the River.

Throughout the fogging season the Eastern and North Central Zones were fogged much more than the other zones. This activity reduced the population of mosquitoes before they moved into the heart of the City.

After Hurricane Betsy, fogging operations were discontinued for one week due to lack of electrical power. As soon as the power was restored, fogging operations were stepped up to meet the hordes of mosquitoes produced by the inundation of the large expanse of marsh and woodland.

In late October and November, a highly crepuscular mosquito (Culex salinarius) increased in numbers so rapidly that fogging operations had to be altered. Because these mosquitoes were active for only short periods in late afternoon, the fogging machines were set to deliver 80 gallons per hour and the trucks were driven at 10 miles per hour. This enabled the drivers to complete assigned areas in the short time the Culex were most active. Very little fogging was done in December because of cold weather.

Man hours	2314.4
Hours fogged	1535.8
Gal. insecticide used	68061
Insecticide cost @ .30/gal.	\$20,418.30
Labor cost	\$ 3,888.19
Gallons gas used	2606.3
Quarts oil	71
Cost of gas & oil	\$ 821.12
Gallons of propane	6275
Cost of propane	\$ 517.06
Misc.operational cost	\$ 119.30
Miles traveled	18946
Acres fogged	126710
Total cost	\$ 25,763.97

EXPENDITURE REPORT FOR 1965

	<u>Budgeted Amount</u>	<u>Expenditures to date</u>	<u>Balance</u>
Salaries	\$ 76,108.00	\$ 61,840.91	\$ 14,267.09
Equipment	60,600.00	45,990.02	14,609.98
Supplies & Materials	67,310.00	38,740.19	28,569.81
Contractural Services	<u>14,540.00</u>	<u>12,372.93</u>	<u>2,167.07</u>
	\$ 218,558.00	\$ 158,944.05	\$ 59,613.95

