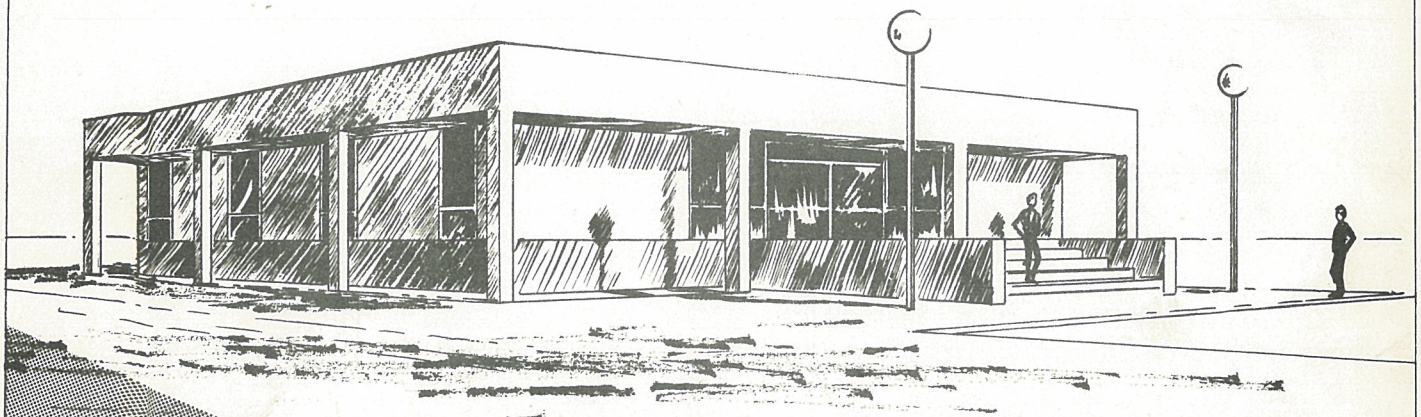
ANNUAL REPORT

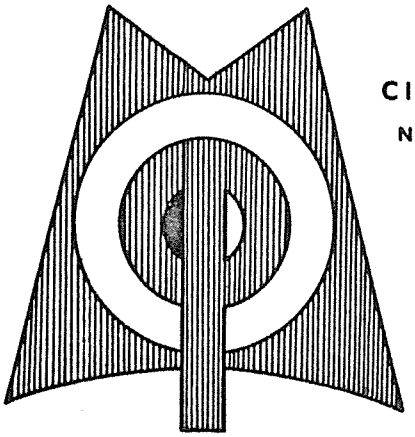
to the

CITY of NEW ORLEANS
DEPARTMENT of HEALTH



by the DIVISION OF
MOSQUITO CONTROL

1966



CITY OF NEW ORLEANS · DEPARTMENT OF HEALTH
NEW ORLEANS, LOUISIANA 70126
DIVISION OF

Mosquito Control

GEORGE T. CARMICHAEL, ADMINISTRATIVE DIRECTOR
6601 LAKESHORE DRIVE, ON THE AIRPORT 947-1181

ANNUAL REPORT
1966

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DIVISION OF

MOSQUITO CONTROL

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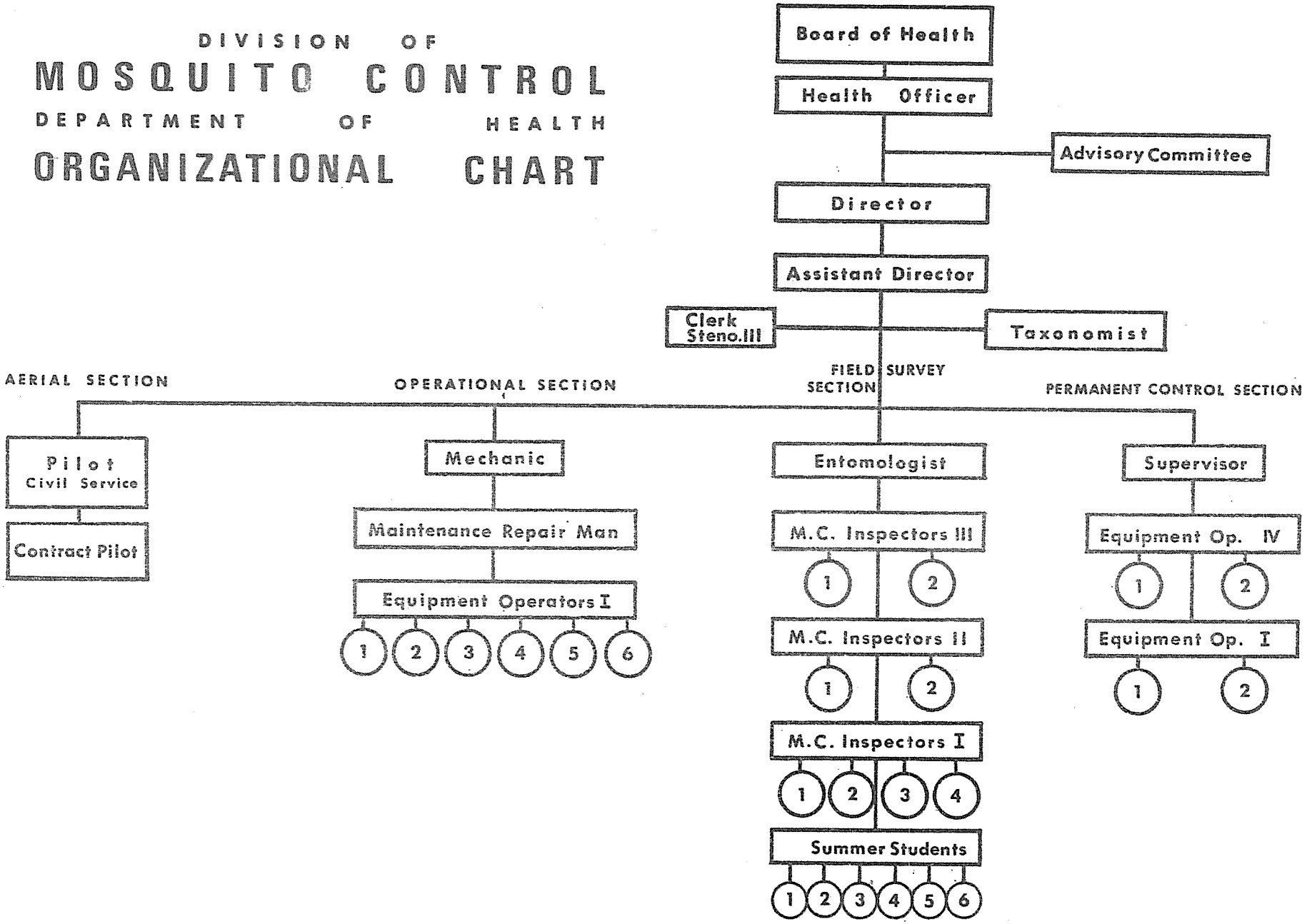
ORGANIZATIONAL CHART



ANNUAL REPORT FOR 1966

The Mosquito Control Division of the City of New Orleans Health Department completed the second full year of operation during the calendar year 1966. The entire year was spent in temporary headquarters at Camp Leroy Johnson, and the limited space prohibited the full expansion of our operation during the year.

A ground-breaking ceremony was held on May 24 for construction of a new administration and laboratory building and an operational building on the one-and-a-half acres provided by the Orleans Levee Board on Lakefront Airport for this purpose. The new headquarters was under construction throughout the remainder of the year and was ready for occupancy at the end of 1966.

The mosquito annoyance during calendar year 1966 was extremely low, with almost a complete absence of salt marsh mosquitoes, Aedes sollicitans. The heavy rainfall throughout the year of 74.1 inches is the greatest single contributing factor to the low density of mosquitoes. The adult counts on the salt marsh mosquitoes showed a 90% reduction in 1966 over the counts of 1965.

The City of New Orleans was surprised in the late summer with the appearance of St. Louis encephalitis in the metropolitan area. A total of 19 cases were reported, with 2 confirmations. Fortunately, the mosquito control program had been conducting an encephalitis surveillance program, and the appearance of the cases could not be substantiated by a high level of virus in the wild bird or mosquito population. Intensive control efforts on the domestic mosquitoes were initiated, and credit was given the control programs in the metropolitan area for the fact that a full fledged epidemic did not develop. The encephalitis surveillance program was carried on throughout the year.

An Open House was held March 3 for the 60 rain gauge operators and the 25 light trap operators who volunteer their time and services to aid the mosquito control program. A slide show of our operation was presented at the Open House.

A field test was conducted during the summer to evaluate two new larviciding oils supplied by Esso Research. Of the two oils tested, one proved superior to the deisel with emulsifier now being used, and the other was inferior. Further tests with new larviciding oils are planned.

Delivery on the new amphibious marsh buggy, which was designed for our operation, was received during the summer months and immediately put to use in our marsh inspection program. This inspection program also received a boost with the delivery of a two-way radio system employing porta-mobile units for the vehicles and personnel.

The City initiated a new pay scale, upgrading the position of inspectors, which eased the problem of procuring personnel for these positions. An on-the-job training program was designed and put into effect during the year where certain days each month are devoted to training on particular subjects. These presentations and pursuing discussions are being taped and will form a nucleus for a traning manual which will be prepared when the total outline has been completed.

The high light of the year was the donation from the Air Force of a surplus aircraft, C-47 Model. This aircraft, which was in excellent shape, was flown into our headquarters on the Lakefront Airport, and will be painted and equipped for aerial application of ultra low volume insecticides. Bids were also received during the year for the first amphibious dragline to be used in our permanent control operation. Up to this time, permanent control has been limited to the co-ordination of developers in the area of the Parish were spraying occurs.

The mosquito control personnel were active in their support of the Co-ordinating Council on Wildlife Management and Mosquito Control, which was founded during the year. This Co-ordinating Council has already proved beneficial to both wildlife interests and mosquito control and will assure both operations of the support of the other in their undertakings.

The Expenditure Report for 1966 shows that of the $300,000 budgeted, a surplus of $81,424.26 existed. This was due entirely to the fact that the program could not be expanded as planned in our temporary location.

A detailed report of each activity of the control program carried on in 1966 is included in this report.

Respectfully submitted,

George T. Carmichael

George T. Carmichael
Mosquito Control Administrator

ENTOMOLOGICAL REPORT FOR THE YEAR 1966

The most critical period for mosquito production is early spring. Rainfall at this time can influence strongly the abundance and predominance of species, and may set the stage for mosquito breeding throughout the year. Should the spring be typified by frequent rains interspersed with fair weather, conditions are ideal for the production of Aedes sollicitans and other flood water mosquitoes. The mosquitoes hatched by these rains will deposit eggs during the fair weather periods, and their progeny will, in turn, do likewise. Thus each succeeding brood is larger than the preceding, and when peak of production is reached, usually in June, unbelievable numbers of adults may be present.

If, however, rains are frequent, with little chance for an area to dry between rains, we see another type of mosquito predominate, the permanent or semi-permanent water mosquito. In contrast to the flood water mosquito, which oviposits on moist ground, these insects deposit eggs on the surface of the water.

Thus very wet springs which cause breeding areas to remain flooded are optimum for the production of permanent water mosquitoes, while at the same time prevent a progressive build-up of flood water species. Conditions become especially well suited when after the breeding areas are inundated, rainfall becomes less than normal. Thus those permanent water mosquitoes breeding at the time are not hampered by flushing action of rains or introduction of minnows from nearby streams.

The year 1965 was as the latter description. Recorded accumulative rainfall for the first eight months was 58.7", the second greatest ever recorded for this area in 73 years. Total accumulative rainfall for the year was 74.1", the highest since 1929. The influence exerted on mosquito production by such rainfall is clearly reflected in adult collections throughout the year, as indicated in Table I. Twenty-five New Jersey light traps, operating twice each week, captured a total of 211,172 adult female mosquitoes in 2,146 collections, for an average of 98.4 per trap night. Species breeding in permanent water comprised 74% of this total, while flood water species accounted for only 12.5%.

A. sollicitans, the most pestiferous flood water species in the New Orleans area, was conspicuous by its absence in light trap collections. This mosquito contributed 3.5% of the year's collections. A. vexans was the most abundant flood water mosquito during the year, yet only 17,099 adult females were captured (8%).

C. salinarius dominated light trap collections (59%) throughout 1966. The name of the species is apparently a misnomer, since

it is not a salt water breeder, however, it can be found in almost every other conceivable situation, grassy pools, ditches, brackish water, artificial containers, etc. This trait, of course, adds to the difficulty in the control of the species.

Anopheles crucians was the second most abundant species observed during the year; it comprised 15% of the total adult female mosquitoes recorded.

The average number of adult females collected per trap night in each control zone is expressed on a monthly basis in Table II. The zones in reference were established in 1965 to facilitate data analysis, and are illustrated in Figure I. Also indicated in Table II are the predominant species for each month, which emphasizes the influence of a wet year on mosquito production. C.salinariu predominated each month, with the exception of February, when dominance was exerted by another permanent water species.

The South Shore-Michoud Zone had the highest concentration of mosquitoes during the year, an average of 30.8 per trap night. The traps showing the highest count in this Zone were Nos. 19 and 17, with 46% and 39% of the catch, respectively. The Chef Menteur-Lake St. Catherine Zone ranked second for the year, with Trap No. 21 contributing 54% of the collections. Both these areas are rather far removed from the bulk of the populace of Orleans Parish and are occupied mainly by fishing camps. Ranking third in mosquito abundance was the Eastern Zone. This is an area of rapid urbanization, however, Trap No. 14, which accounted for 64% of the collections for that Zone is in a relatively unpopulated area. The Algiers Zone, which registered an average of 78 adults per trap night, had 77% of its catch delivered by Trap No. 1, which is several miles from the populated region of that Zone. The vast majority of the populace lives in the North and South Central Zones. These showed an average of 43 and 2 mosquitoes per trap night, respectively, for the entire year. It is obvious, then, that control efforts were successful in averting a mosquito pest problem in the populated areas of the Parish.

The control of A. sollicitans is of prime concern in Orleans Parish. Figure II illustrates the low density of this species present throughout the year, as determined by light trap collections. Broods of flood water mosquitoes were not simultaneous, and, while some were of considerable size, they were sufficiently spaced in time to allow for adequate control in the larval stage. This illustration again emphasizes the relative abundance of Culex species throughout 1966.

The year began with Culex in predominance, breeding in the residual waters of Hurricane Betsy. March was atypically dry for 1966, and since breeding areas were already flooded, the relief from flushing rains provided ideal breeding conditions, and resulted in a peak production. Temperatures at this time were too low for effective adulticiding. However, beginning in April when temperatures

ranged from 62° to 77° F., increased control was feasible, and the results were obvious.

In addition to the 25 New Jersey type light traps, information from landing rate and truck trap collections was used to gather adult density data. Each light trap had associated with it 3 landing rate stations with 3 specific sites per station, giving a total of 216 counts per collection day. The truck trap is a relatively unbiased collecting device that samples a given volume of air for mosquitoes. This technique was used sparingly in the latter part of the year, but is expected to provide much information in 1967.

Control and inspection efforts were increased in all phases in 1966. More than 4,000 man-hours were devoted to inspection and mapping; this is a 100% increase over 1965. The work was guided by rainfall patterns, which facilitated the location of mosquito broods for treatment. Inspection was carried out in all areas of the Parish marsh, woodland, and urban.

The program of locating the major breeding foci of C. quinquefasciatus made much progress during the year. This species breeds in countless types of artificial containers found in many backyards. However, if the sources of infestation, such as industrial waste areas, are located and treated regularly, the problem of controlling the species is greatly reduced. Along these same lines, the checking of catch basins for possible breeding was undertaken. It was discovered that the basic design of these devices is excellent and does not, in general, afford breeding places for mosquitoes.

Inspection capabilities were increased in December with the purchase of aerial photographs covering that part of the Parish lying east of U. S. Highway 11. These photographs will be invaluable in locating mosquito breeding areas.

The Division's two 4-wheel drive larviciding trucks, equipped with 360-gallon tanks, distributed nearly 5,000 gallons of diesel fuel on accessible breeding areas. This represents a 43% increase over ground larviciding activities of 1965.

Aerial larviciding was likewise increased vastly over past operations. More than 91,000 pounds of 7½% Paris green were distributed, an increase of 94%. A more detailed account is included elsewhere in this report.

The problem encountered in the control of C. salinarius is reflected in the aerial adulticiding activities of the year. Since this species is highly crepuscular, adulticiding operations are ideally carried out during a short time, after sunrise and before sunset. This is best accomplished by aerial application of insecticide since larger acreages can be treated in the short time allowable. The Division's aircraft applied more than 32,400 gallons of 4% Malathion, which represented an increase greater than 300%

over the 1965 operations. A more complete explanation of both aerial and ground adulticiding is to be found elsewhere in this report.

The increased control activity reported on here has accomplished favorable results, as illustrated in Figure III. This compares the average adult densities for the years 1965 and 1966. The peak production months remain the same for both years as may be expected; however, the number of adults present in 1966 is significantly less than that of 1965. There are many factors that exert themselves on mosquito production: rainfall, temperature, disease in the mosquito population, etc., but the role of mosquito control has certainly played a major part in the results.

In addition to its regular duties, the Division undertook preliminary testing of two new larviciding oils and a new formulation of Paris green. These are not detailed studies, rather a test of the materials' effectiveness under actual field conditions.

Respectfully submitted,

Wayne C. Machado

Wayne C. Machado
Acting Mosquito
Control Administrator

TABLE I

ORLEANS MOSQUITO CONTROL

LIGHT TRAP TABULATION 1966

DATE 1966

LOCATION	TOTAL		AEDES			ANOPHELES		CULEX		CULIS.	MANS.	PSOR.	OTHER	CULEX	NO.
	MALE	FEMALE	SOLL.	TAEN.	VEX.	CRUC.	QUAD.	QUINK.	SALIN.	INOR.	PERT.	CONF.	SPP.	ERR.	COL.
1-LOWER ALGRS.	646	15,646	1/310	0/22	85/1169	30/253	2/110	2/30	377/9319	73/3632	0/31	73/739	1/29	2/2	101
2-MIDDLE ALGRS.	338	3,209	0/7	0/3	140/580	1/153	2/61	0/4	159/1750	34/590	0/6	1/32	1/3	0/20	96
3-UPPER ALGRS.	319	1,414	0/18		149/429	1/39	0/10	3/3	134/499	27/282	0/6	2/121	0/1	3/6	98
4-IRISH CHANN.	81	320			10/51	2/14	0/1	0/4	63/149	5/90	0/5	0/3	1/3		90
5-AUDUBON	199	398	0/2		52/97	6/26	1/6	6/1	118/147	5/80	1/47	3/18	1/3	0/1	91
6-LAKEWOOD	170	1,111	0/8		18/226	6/20	1/7	0/1	135/692	5/97	0/6	2/41	3/9	0/4	83
7-EAST END	1013	5,025	4/41		280/1588	27/164	0/4	0/16	556/2519	104/496	7/11	35/146	0/5	0/35	93
8-L.S.U.N.O.	301	1,074	0/8	0/2	78/238	12/14	0/21	4/5	206/531	1/243	0/2	0/4	0/6		93
9-CITY PARK	266	1,593	0/33	0/1	29/421	5/46	0/3	5/20	165/425	22/128	0/3	40/607	0/3	0/3	86
10-VIEUX CARRE	347	871	4/19		41/267	5/39	0/8	2/6	289/418	3/95	0/4	1/12	1/3	1/0	97
11-CAFFIN	163	682	0/4		26/208	4/10	0/3	3/6	114/814	16/114		0/17	0/4	0/2	79
12-GENTILLY E.	165	2,041	1/106		27/787	8/153	0/42	2/0	72/678	41/175	0/9	0/78	13/9	1/4	63
13-N.O. AIRPORT	671	5,435	0/63	0/5	58/2361	18/204	0/42	7/12	534/1979	45/619	1/28	1/80	6/28	1/14	97
14-LITTLE WOODS	998	23,087	1/153	0/8	44/1283	148/1686	2/220	9/16	613/16284	161/3039	0/66	15/150	5/31	0/151	101
15-VILLAGE D'EST	253	5,179	8/333	0/2	13/1434	12/182	0/23	0/69	193/2701	21/236	0/29	2/103	4/62	0/5	86
16-BIENVENUE	658	2,945	3/131	0/1	68/124	86/502	0/33	66/52	385/1545	36/489	0/1	0/37	11/24	3/6	86
17-MICHOUD	965	37,233	47/3526	0/28	145/2652	184/10359	8/628	8/144	441/17179	123/2226	0/32	2/166	7/233	0/60	91
18-POWERS JCT.	195	10,696	2/956		0/428	0/1715	0/52	1/25	179/7059	13/298	0/32	0/53	0/59	0/19	81
19-SOUTH SHORE	1090	44,110	0/608	0/6	83/485	111/5474	5/111	10/10	733/35252	148/2021	0/33	0/32	0/72	0/6	93
20-CHEF MENTEUR	278	6,471	23/523	4/19	12/76	17/1855	1/35	9/0	189/3097	18/783	0/3	5/56	0/5	0/19	67
21-GREENS DITCH	436	23,451	12/678		7/617	73/7003	0/83	3/1	243/12890	85/2008	0/10	13/90	0/24	0/47	94
22-RIGOLETS	263	13,386	15/750	0/4	23/113	12/1798	4/116	0/2630	186/7253	19/590	0/2	0/98	4/12	0/20	92
23-Leroy Johnson	406	3,198	7/111	0/4	128/758	9/119	1/16	9/18	229/1463	16/490	0/9	4/175	3/18	0/17	87
24-Eads	322	2,371	3/51	0/2	82/671	1/90	0/4	23/83	203/1301	4/46	0/9	5/112	1/1	0/1	64
25-Galvez	65	226			6/36	2/5	0/7		57/142	0/29		0/2	0/2	0/3	37
Per cent %			3.5%		8%	15%	0.5%	1.5%	59%	8.5%		1%			2146
TOTAL			131/...	4/...	1604/...	780/...	27/...	172/...	6573/...	1025/...	15/...	204/...	62/...	11/...	

TABLE II - Average number of adult females collected per trap night per zone, Orleans Parish, Louisiana, 1966

Zones	Number Collections/Average												Total 1966
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Algiers	25/ 187	22/ 70	26/ 53	23/ 57	26/ 140	27/ 69	23/ 24	25/ 92	24/ 66	27/ 151	22/ 19	25/ 15	295/ 78
S. Central	31/ 91	25/ 4	34/ 11	21/ 3	33/ 7.5	38/ 9	29/ 2	40/ 41	33/ 2	39/ 63	32/ 7	39/ 4	394/ 2
N. Central	26/ 20	28/ 15	49/ 59	40/ 27	41/ 72	43/ 25	40/ 8	52/ 33	48/ 19	45/ 217	45/ 16	49/ 12	506/ 43
Eastern	28/ 429	23/ 78	33/ 185	26/ 60	31/ 105	28/ 146	25/ 40	31/ 72	27/ 39	35/ 243	30/ 17	30/ 19	347/ 119
S. Shore-Michoud	32/ 324	28/ 120	31/ 918	26/ 498	32/ 371	30/ 281	26/ 158	29/ 204	26/ 195	30/ 553	30/ 46	32/ 29	352/ 308
Chef Ment.-L.St.Cath.	26/ 330	21/ 31	23/ 95	19/ 111	24/ 158	23/ 613	17/ 174	24/ 116	22/ 96	20/ 666	17/ 58	18/ 56	254/ 208

Predominant Species

A 70% C 25%	C 62% A 36%	A 81% D 13%	A 85% D 7%	A 41% B 23%	A 39% D 27%	A 33% D 31%	A 37% D 20%	A 55% D 28%	A 69% D 12%	A 69% D 12%	A 47% C 43%

A - *Culex salinarius*
B - *Aedes vexans*
C - *Culiseta inornata*
D - *Anopheles crucians*

Fig. 1

MOSQUITO SURVEY AREAS
ORLEANS PARISH, LOUISIANA

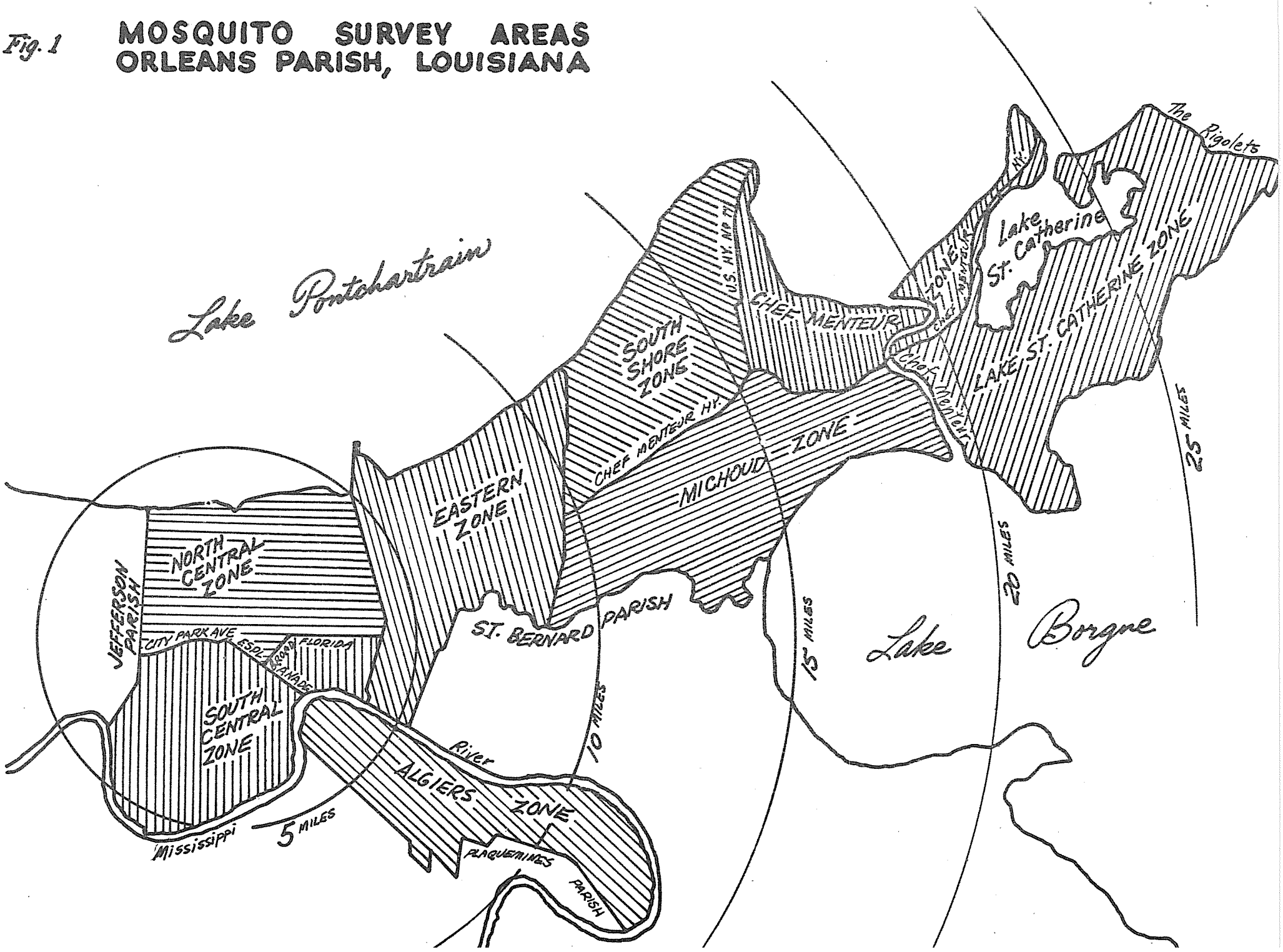


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FIG. II

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

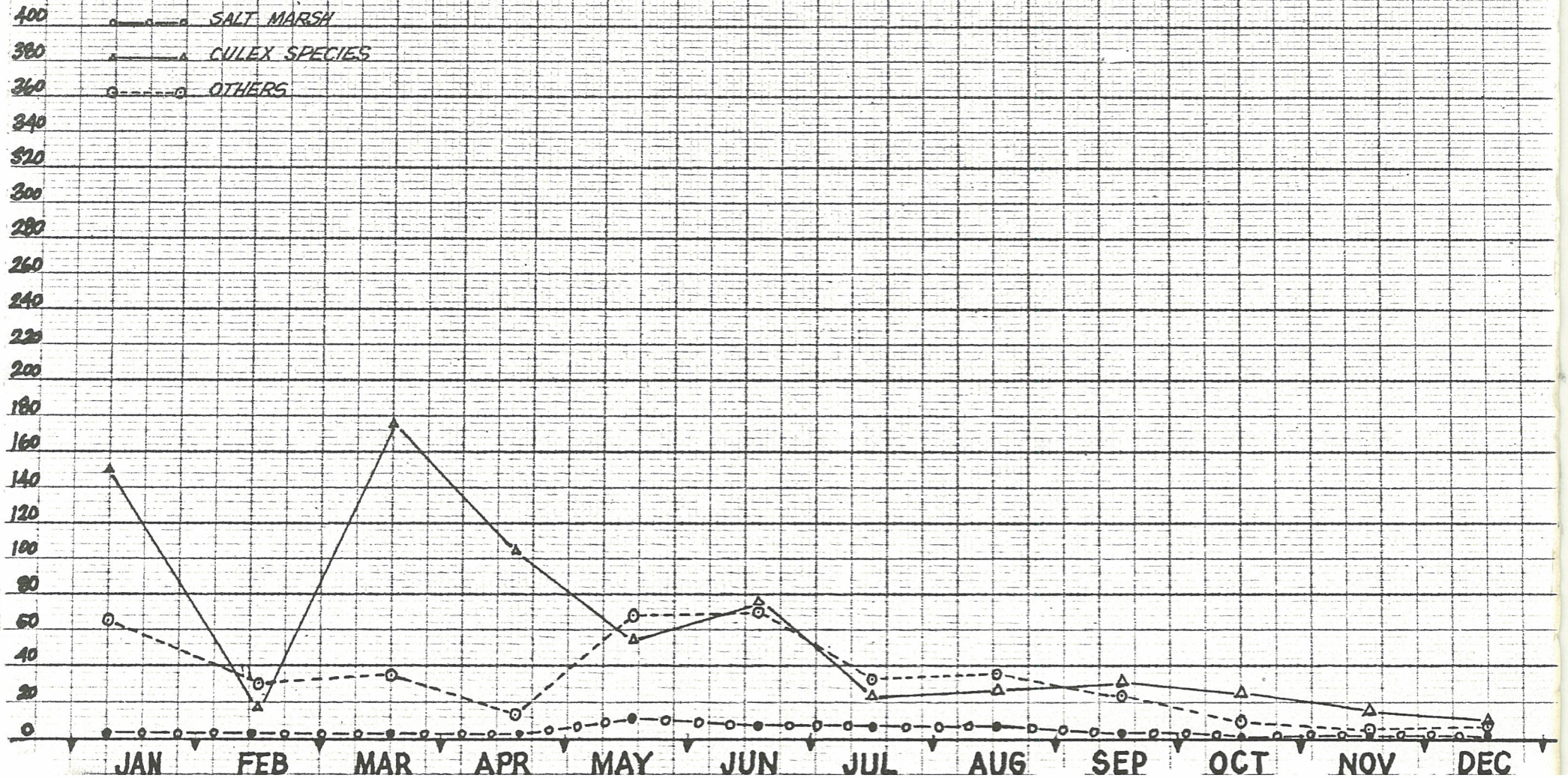
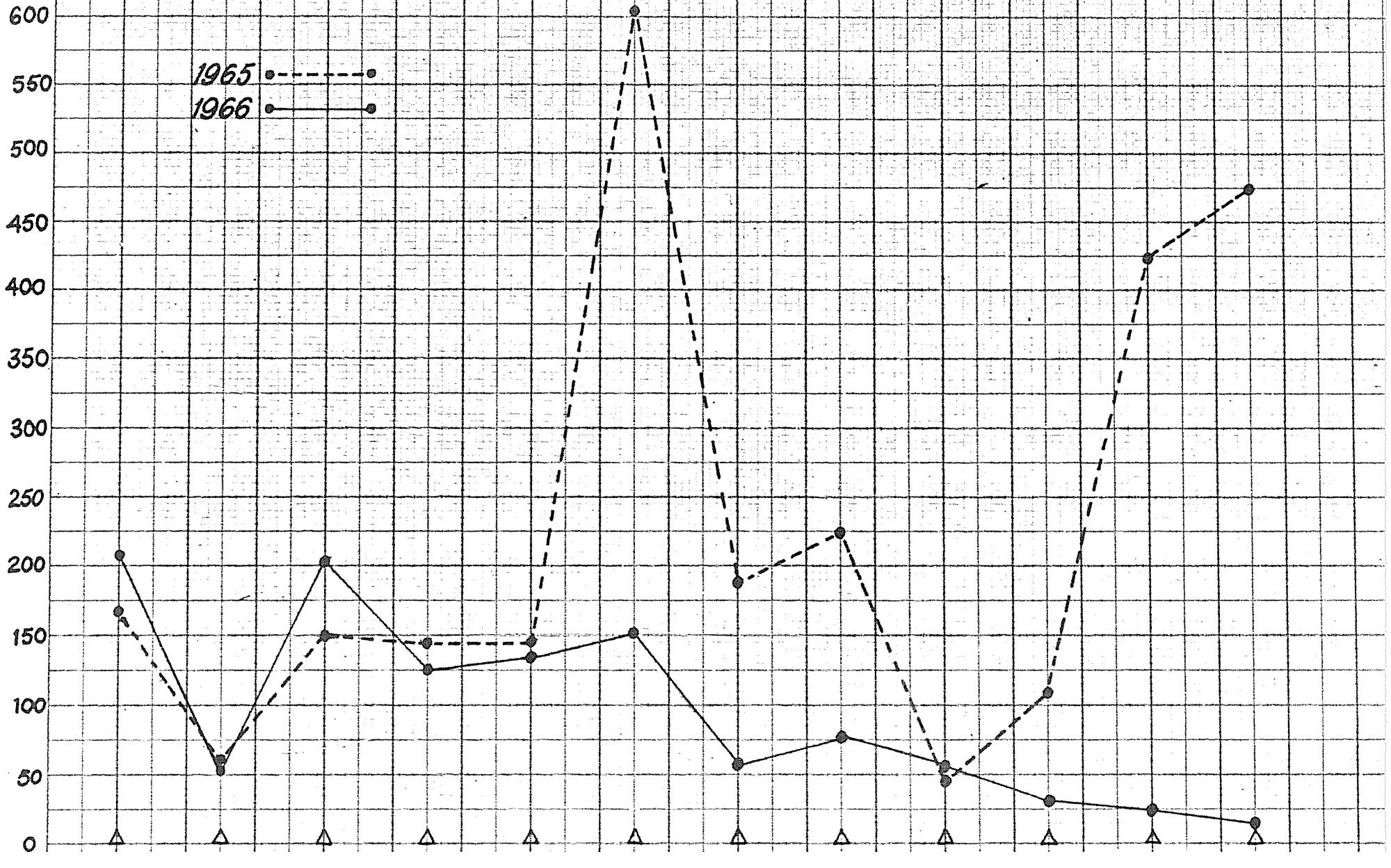


FIG. III

Comparison: Average Female Mosquito Monthly Density, 1965 and 1966



AERIAL APPLICATIONS 1966

The aerial program consists of both adulticiding and larviciding with the Piper Pawnee-235 equipped with both a spray boom and a Transland swathmaster pellet distributor. The larviciding operation is conducted with the application of 7½ per cent Paris green pellets applied at the rate of 15 pounds per acre. The treatments followed field inspection to determine larval densities to warrant expenditures. A total of over 91,000 pounds of pellets was used during the year, and the areas receiving the larvicide were as follows:

Little Woods	40.8%
Lower Algiers	14.2%
Intracoastal Waterway	14.1%
Paris Road South	12.5%
Bayou Bienvenue	10.0%
Chef to Ft. Pike	7.6%

The total of 99:45 hours was flown on this operation, with July, August and September being the peak months when over 20 hours were flown each month.

The aerial adulticiding utilized the liquid spray system and applied four per cent malathion in No. 2 diesel oil at a rate of three quarts per acre. The plane is flown at an altitude of 35 feet and a speed of 90 miles per hour. A total of 186:00 hours was flown in this operation and a total of 32,400 gallons of material was applied.

Great care was taken to prevent the application of the adulticide material into the breeding areas. A total of 25 areas was set up where adulticiding can be accomplished without fear of creating a resistance problem. These areas are mainly levees and open areas between the breeding areas and the population of the city. The frequency of this treatment in given areas was as follows:

Intracoastal Waterway	23.4%
Village de l'Est	15.0%
Chef to Ft. Pike	14.1%
Highway #11 Levee	10.0%
Big Cheniere	8.8%
Lower Algiers	5.9%
Dwyer Canal	4.6%
L & N Railroad Levee	4.2%
Little Woods	3.8%
Old Gentilly Highway	1.4%

Aerial inspection for flooding conditions comprised 44:35 hours, also a total of 12:45 hours was flown for test flights and calibration of equipment.

Respectfully submitted,

Terry Hayes

Terry Hayes
Pilot

ENCEPHALITIS SURVEILLANCE 1966

The term "encephalitis" indicates an inflammation of the brain. It may be caused by various types of micro-organisms, among which are the mosquito-borne viruses, arboviruses. While the mosquito is not the only arthropod capable of transmitting encephalitis, it is probably the most important.

The biology of mosquito-borne encephalitis involves a transmission cycle between birds and mosquitoes, with birds serving as a natural host of the virus. When a bird is bitten by an infected mosquito it becomes diseased and circulates active virus in its blood for several days. If during this time other mosquitoes bite the infected bird, they, too, become potential vectors, and, in turn, may infect other birds. The normal cycle of the virus during the active transmission season then is: mosquito - bird - mosquito. It is when the percentage of infected birds reaches epidemic proportions (approximately 10%) that the disease tends to spill over into the human population.

Not all mosquitoes are capable of virus transmission, and of those that are capable, some species are more efficient vectors than others. In the New Orleans area, the suspected species are Culex quinquefasciatus, C. salinarius, and Aedes sollicitans. Of course, other species present in this Parish are capable of transmitting the encephalitides, but those mentioned are probably the most important.

Obviously, it is desirable to be cognizant of encephalitis activity before the disease enters the human population so that preventive measures can be applied. To this end, an Encephalitis Surveillance Program has been developed by the Division of Mosquito Control in cooperation with the Louisiana State Board of Health. The program is designed to sample both the mosquito and the bird population for the presence of encephalitis.

The mosquito sampling during 1966 began in March with the use of CDC miniature light traps. Approximately 3 pounds of dry ice was placed near each light trap to supplement the trap's efficiency. Collections were made twice every other week during most of the season, and increased to twice every week when encephalitis activity was noted among horses in neighboring parishes. Trapping sites were located in Lower Algiers, Audubon Park, City Park, Little Woods, and near the junction of U.S. Highways 90 and 11.

The mosquitoes collected from March through July were identified to species and divided into pools consisting of approximately 100 mosquitoes of a particular species in each pool. These, in turn, were forwarded to the Louisiana State Board of Health Laboratory for viral study. A total of 166 such mosquito pools were assembled and studied during this period.

Collections made from March through November were shipped directly to CDC, Atlanta, Georgia, without identification or pooling. This action was taken because an airline strike in progress at that time prevented the State Laboratory from receiving mice which are necessary in the testing technique employed. The samples delivered to CDC, many of which consisted of several vials of mosquitoes, numbered 133.

Trapping and bleeding of birds began during July in 1966. All birds, with the exception of 9 specimens which were taken by shotgun, were released unharmed after the removal of o.5 cc of blood. Several techniques were employed in the trapping operation, including mist nets, Havahart sparrow traps, Havahart pigeon traps, and baited walk-in traps.

Blood samples were sealed and frozen on dry ice before delivery to the laboratories. Specimens 1 through 90 were processed by the Louisiana State Board of Health Laboratory; Specimens 91 through 389 were shipped directly to CDC for viral studies.

To date there has been no virus isolation made from mosquito pools submitted for study, likewise, bird blood samples have shown no evidence of the presence of encephalitis antibodies.

SURVEY OPERATIONS FOR 1966

Light trap operations

2,151 light trap collections	
775.5 man hours	$ 1,561.97
10,549 miles traveled @ 3¢ per mile	316.47
Cost of light trap collections	1,878.44

Landing rate counts

12,129 landing rate counts made	
485 man hours	989.16
6,905 miles traveled @ 3¢ per mile	207.15
Cost of landing rate counts	1,196.31

CDC light trap operation

221 light trap oollections	
446 man hours	932.04
5,034 miles traveled @ 3¢ per mile	151.02
Cost of light trap collections	1,083.06

Identification of mosquitoes

228,150 mosquitoes identified	
223 man hours	594.88
Cost of mosquito identification	594.88

Mapping & field survey

4,096.5 man hours	5,998.44
11,722 miles traveled @ 3¢ per mile	351.66
Airplane rental for inspection	694.50
Cost of mapping & field survey	7,044.60

Use of aircraft

339 man hours loading or flagging	773.41
286 hours flying @ $7.50 per hour pilot cost	2,145.00
32,432 gal. adulticide @ 20¢ per gallon	6,486.00
91,256 lbs. Paris green pellets @ 11¢ per lb.	10,038.16
Cost of aircraft use	19,442.57

Survey Operations for 1966 (Cont'd)

Ground larvicide

816 man hours	$ 1,659.91
2,773 miles traveled @ 3¢ per mile	83.19
4,990 gal. #2 diesel oil @ 10¢ per gal.	499.00
107 lbs. Paris green pellets @ 11¢ per lb.	11.77
Cost of ground larviciding	2,253.87

Rain gauge maintenance

97.5 man hours	201.25
742 miles traveled @ 3¢ per mile	22.26
Cost of rain gauge maintenance	223.51

Catch basin inspection

14 man hours	27.30
47 miles traveled @ 3¢ per mile	1.41
Cost of catch basin inspection	28.71

Truck trap operation

102 runs made		
116 man hours		
774.5 miles traveled		
Mosquitoes collected - females	7,190	
males	588	
Average female catch per run	70.5	
Total cost of truck trap operation		228.59

Light trap mainentnance

102 man hours	185.28
440 miles traveled @ 3¢ per mile	13.20
Cost of light trap maintenance	198.48

General office work

3,062.5 man hours	6,737.52
Cost of general office work	6,737.52

EXPENDITURE REPORT FOR 1966

	TOTAL EXPENDITURES	BUDGETED AMOUNT	BALANCE
Salaries	$ 85,658.87	$108,722.00	$23,063.13
Equipment	74,022.67	95,000.00	20,977.33
Supplies and Materials	51,261.73	88,621.50	37,359.77
Contractural Services	7,626.97	7,651.00	24.03
Current Charges	5.50	5.50	-
	$218,575.74	$300,000.00	$81,424.26