



directing council

PAN AMERICAN
HEALTH
ORGANIZATION

XV Meeting

regional committee

WORLD
HEALTH
ORGANIZATION



XVI Meeting

Mexico, D.F.
August-September 1964

Provisional Agenda Item 28

CD15/20 (Eng.)

9 July 1964

ORIGINAL: SPANISH

STATUS OF AEDES AEGYPTI ERADICATION IN THE AMERICAS

Seventeen years ago the Directing Council of the Organization, desirous of definitively eliminating urban yellow fever from the Americas, entrusted the Pan American Sanitary Bureau with the task of promoting and coordinating A. aegypti eradication in this Hemisphere.

Since it received that mandate, the Bureau has been doing everything possible to fulfill it, and, with that end in view, has been urging and stimulating infested countries and territories to initiate or intensify vector control and has cooperated to the extent its budgetary possibilities allowed with all the countries that requested assistance by providing them with technical advisory services, supplies and equipment.

In the course of those 17 years, many difficulties arose in the campaigns in various countries and territories; however, thanks to the combined efforts of the Governments and the Organization, all those difficulties have been satisfactorily overcome, so that even though much still remains to be done to complete the eradication of the mosquito in the Americas, the results already attained are promising.

Up to the present time 16 countries and territories have completed eradication and have been declared free from the vector by the Governing Bodies of the Organization. They are: British Honduras, Bolivia, Brazil, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and the Canal Zone.

Furthermore, the campaign is completed in Argentina where, at the time of writing, a special verification is being made, and in Bermuda, where the special verification made in 1963 confirmed that the mosquito had been eradicated; the campaign is in its final phase in Colombia, where the reinfestations which occurred in recent years are believed to have been eliminated.

However, British Guiana, which was free from the mosquito for a long time, was found to be reinfested in 1963, and an investigation carried out early in 1964 showed that the reinfestation was high and generalized.

At the present time, as may be seen in the map annexed to this report, the problem is limited to the extreme northern part of South America, where the Guianas and part of Venezuela are still infested; to the United States of America, where the campaign is just beginning, and to the Caribbean Area, where with very few exceptions the campaign has been interrupted, are marking time, or are making very slow progress with meager results.

One of the main obstacles confronting the program in the Caribbean is vector resistance to chlorinated insecticides, which are no longer effective in this area.

With the view to surmounting this obstacle, the Organization, in collaboration with the Minister of Public Health of Jamaica, and the University of the West Indies, set up a small laboratory in Kingston in 1962, for the following purposes: a) to determine the susceptibility of A. aegypti in the countries and territories of the Caribbean to DDT and to dieldrin as well as to such insecticides as may replace the chlorinated ones in mosquito eradication; b) to evaluate insecticides that can be used against the vector in the territories and countries in which the vector is resistant to DDT and dieldrin; c) to study the ecology of A. aegypti in this area in order to ascertain the vulnerable points at which the species may be attacked more effectively.

The laboratory has already made susceptibility tests on A. aegypti strains in 64 localities from 16 administrative units in the Caribbean. The results of these tests, together with the information obtained by earlier investigators, show that, with very few exceptions, the mosquito strains in this area are resistant to DDT or to dieldrin, or to both simultaneously.

At the same time the laboratory has investigated the susceptibility of A. aegypti strains from 21 different localities to six insecticides which may possibly replace the chlorinated ones; it has been evaluating these new insecticides in various types of water containers which are the usual breeding places of the mosquito in the Caribbean, and has begun to study the ecology of the vector in places in which it is resistant to both DDT and dieldrin.

Some of the new insecticides evaluated by the laboratory are promising; however, further information is needed about the action of these insecticides before a decision about the use of any of them in A. aegypti eradication can be reached.

On the other hand, it must not be thought that the solution of the resistance problem alone would solve the problem of eradication of the Caribbean. In order to ensure the success of the campaign in this area it would also be necessary to overcome existing economic and administrative difficulties; if this were done, the mosquito could be eradicated even though no new residual insecticide were available.

A summary on the status of the campaign in the countries and territories not yet declared free from the mosquito is given below:

ARGENTINA

The campaign ended in 1963, when eradication operations were completed in the area initially presumed to be infested by A. aegypti.

Since campaign began in 1953, 3,741 localities have been inspected and 165 were found initially infested. Three consecutive and negative verifications were made in them after they had been treated and they are now considered free from the mosquito.

At the time of writing the special verification is being made in Argentina with the cooperation of the Bureau, and the results are expected to confirm that A. aegypti has been eradicated from the country.

COLOMBIA

The reinfestations discovered in Cucuta in 1961 and in San Luis in 1962 have been eliminated. Up to March 1964 four consecutive negative verifications had been made in San Luis, and two consecutive negative verifications in Cucuta.

In view of the reinfestation of these two localities, an investigation was made in 1962 in the remainder of the municipality of Cucuta (in which San Luis is also situated), as well as in neighboring municipalities, in order to find out whether reinfestation had spread to other areas. These operations covered seven municipalities; a total of 40 localities were inspected, all with negative results.

In 1963 a vigilance inspection in the Port of Santa Marta on the Atlantic coast disclosed a new focus of reinfestations in Colombia. On this occasion a small focus of A. aegypti was discovered in a disused motor tire, possibly due to a mosquito transported in one of the small craft which frequently sail from the Caribbean territories to Santa Marta. This breeding place was eliminated, and a complete inspection of the city showed that the reinfestation had not spread beyond the initial focus.

In addition to Santa Marta, vigilance inspections were made in 1963 in the port areas of Barranquilla, Cartagena, and Buenaventura and also in the international airport of La Soledad, which serves Barranquilla. No trace of A. aegypti were found in any of these localities.

Verification operations in Cucuta, San Luis, and Santa Marta, and vigilance operations in other localities in Colombia exposed to reinfestation, are continuing in accordance with the plan of operations which the campaign has been following since it was renewed in 1961. If the results of these operations are favorable, the country may possibly be in a position to be declared free of the mosquito in 1965.

CUBA

In accordance with the plan of operations being followed by the campaign, eradication operations are continuing in the provinces of la Havana, Pinar del Rio, Matanzas, from where they will be extended to the other three provinces of the country.

By March 1964, the number of localities inspected in the initial survey in Cuba, since the beginning of the campaign, was 1,001, of which 726 were found to be infested with A. aegypti. Of the initially positive localities, 523 had been treated; of those treated 476 had already been verified once or more often after treatment, and 408 were considered to be negative, in accordance with the results of the most recent inspections.

The results of the campaign are generally satisfactory; however, in recent years, the operations have been advancing more slowly than was expected, owing mainly to the high and generalized initial infestation found in all areas being covered and to the difficulty in eliminating the mosquito from Greater Havana and its surroundings. These form a complex of cities and villages with more than 500,000 houses, where A. aegypti, in addition to finding excellent conditions for breeding and spreading, is resistant to DDT.

For this reason, the period originally considered necessary for the eradication of the mosquito from Cuba had to be revised, and, according to that revision, it is now believed that, at the present pace, campaign operations will be completed by the end of 1967. However, the Government is interested in shortening the period and is studying the possibility of making a considerable increase in the number of campaign personnel.

UNITED STATES OF AMERICA

At the time of writing the campaign in this country is in its preparatory phase.

With the approval by Congress of the first funds for A. aegypti eradication there was established at the end of 1963 in the Communicable Diseases Center of the United States Public Health Service a department of A. aegypti eradication, under whose responsibility the campaign will be conducted not only in the continental United States of America but also in Puerto Rico and the U.S. Virgin Islands.

Since it was established, the Department has been working on the organization and planning of the program, the preparation of handbooks, the selection and training of personnel, the installation of offices, etc., and it is hoped that by the end of May field operations will have begun.

To start with, eradication operations will be limited to the States of Texas and Florida, Puerto Rico, and the Virgin Islands, and only later

will they be extended to other infested areas in the country which, according to available data, include the States of Alabama, Arkansas, South Carolina, Georgia, Louisiana, Mississippi, and Tennessee.

HAITI

The campaign in this country was suspended in 1958 for financial reasons, and it has not yet been possible to renew it.

JAMAICA

A. aegypti control in this country is still limited to some mosquito control operations in the international airport and port areas of Kingston and Montego Bay.

The Government is organizing a general insect control program which will include certain A. aegypti control measures and will apply to the whole island; however, in view of the resistance to DDT and dieldrin of the mosquito in Jamaica, the renewal of eradication operations, which were interrupted in 1961, continues to depend on whether the studies now being carried out in the country will find insecticides that can be used against A. aegypti in lieu of the chlorinated ones.

DOMINICAN REPUBLIC

The campaign was suspended in 1962 because of the resistance of mosquito to DDT and dieldrin and its renewal continues to depend whether the research now being made in Jamaica will lead to the discovery of insecticides that can be used instead of chlorinated ones.

TRINIDAD AND TOBAGO

In accordance with the latest available information, Trinidad is at present negative.

However, repeated reinfestations in Port of Spain in the last three years show that it will be necessary to maintain an active vigilance in the island for some time before it is possible to be sure that the mosquito has been eliminated from it.

In 1963 some small craft coming from Venezuelan ports that were still positive were found with A. aegypti in the port of Port of Spain and they were thought to have reintroduced the mosquito into Trinidad. With a view to preventing future reinfestation of this type the Jamaican authorities and those of Venezuela are attempting to coordinate the necessary measures to prevent the transport of the mosquito by shipping travelling between the ports of two countries.

The Island of Tobago continues to be negative.

VENEZUELA

The campaign is making a slower progress than was anticipated in the plan of operations. This is due, on the one hand, to the campaign having less personnel in recent years than had been foreseen and, on the other, to the presence of mosquito strains resistant to the chlorinated insecticides in some areas of Venezuela.

In order to control these strains, it has been necessary to concentrate almost all the field personnel in the above mentioned areas and, as a result, operations in other areas of the country have been slowed down.

At the present time, fenthion is being tested against mosquito strains resistant to DDT and dieldrin. The preliminary results are satisfactory, and it is hoped that by using this insecticide in areas infested with resistant strains the work cycle in them can be considerably lengthened and the campaign can have more personnel to increase its activities in other areas.

By March 1964, 70 percent of the area presumed infested had been covered. Initial surveys have been carried out in 5,763 localities, of which 604 had been found positive for A. aegypti. Of the initially positive areas, 560 had already been verified once or more often since treatment and 526 were still negative.

In 1963 the localities of Puerto Cabello y La Guaira were found to be reinfested after having been negative for a long time. These reinfestations were attributed to small craft that sail daily from Curaçao to Venezuela. In 1963 A. aegypti breeding places were found in many of them on arrival at the ports of La Guaira and Puerto Cabello.

In order to prevent a repetition of these reinfestations vigilance has been intensified in the ports, and with the assistance of PAHO, attempts have been made with the Curaçao authorities to coordinate the necessary measures to prevent the ships traveling between the ports of the two countries from continuing to transport A. aegypti.

FRANCE

Guadeloupe - The campaign was suspended in 1962 and has not yet been renewed.

A. aegypti control in Guadeloupe is still limited to mosquito control measures in the international airport and in the port areas of the island.

French Guiana - This department was found to be reinfested in 1963 after having been considered free from mosquito for several years.

To begin with, it was thought that the reinfestation was limited to the city of Cayenne, but an investigation made in 1964 showed that, apart from the capital and its environments, other localities in the interior were infested.

The Government is exploring the possibility of renewing eradication operations in this department; however, no definitive decision has yet been taken.

Martinique - No specific campaign against A. aegypti is being carried on on this island.

The Government is continuing its insect control measures but the results obtained, as far as A. aegypti is concerned, are meager.

St. Martin - The French part of St. Martin administered by Guadeloupe continues to be negative; however, no recent information about the exact situation on the island is available.

In any event, the negativity of this territory will be problematic as long as A. aegypti has not been eliminated from the Dutch part of the island as well, for according to available data it is still infested.

NETHERLANDS

Aruba and Bonaire - Bonaire was found to be reinfested in 1963 by a strain resistant to the chlorinated insecticides, and this reinfestation has not yet been eliminated.

Aruba, which has been negative for several years, is still considered to be free from A. aegypti.

Curaçao - This island is extensively infested; however, in view of the resistance of the mosquito to DDT and to dieldrin, the campaign is limiting its activities to control measures in the port area of the capital of the territory.

Saba and St. Eustatius - These two islands are considered negative.

St. Martin - The Dutch part of the island of St. Martin is still infested and no A. aegypti control operations are being carried out there.

Surinam - Eradication operations in Surinam were begun in 1963 in the city of Paramaribo.

The results obtained in the first four cycles of work, in which dieldrin was used, were rather meager because of the technical and administrative difficulties with which the campaign was faced during that period,

these included low susceptibility of the mosquito to chlorinated insecticides, high rate of absenteeism among field personnel, and high percentage of houses not inspected or treated in any of the cycles.

In February 1964 new mosquito susceptibility tests were made in Paramaribo. The results showed that the vector was more sensitive to DDT than to dieldrin and a change was therefore made from dieldrin to DDT.

The first field observations seem to indicate that the results obtained with DDT are better; however, at the time of writing no precise information is to hand.

UNITED KINGDOM

Antigua and Barbuda - A rapid inspection made in Antigua in February 1964 showed that all the areas investigated, including the capital of the island and its port, were infested.

In view of the resistance of the mosquito to DDT and dieldrin, the Government is studying the possibility of renewing eradication operations in the island using the classic procedures for the control of A. aegypti; however, no definitive decision has yet been taken in the matter.

The island of Barbuda continues to be negative.

Barbados - In 1963 the number of field personnel was increased and their salaries were also raised. As a result the campaign was able to shorten its work cycle and the quality of the work done improved.

However, results obtained continue to be rather meager because of the resistance of the mosquito to DDT whose replacement by dieldrin was approved only at the beginning of 1964.

With this change of insecticide and better supervision of field operations in 1964 it is hoped that there will be appreciable improvement in the results.

Bermuda - This island has been negative for many years, and a special verification made in 1963 with the collaboration of technical staff of the Bureau confirmed that the mosquito had been eradicated from the territory.

Dominica - The campaign in this island is still suspended, for financial reasons.

Grenada - This island is still considered negative.

Grenadines - In this group of islands, Carriacou and Little Martinique as well as Bequia and Union are positive and no eradication or control operations are being carried out on any of them.

British Guiana - British Guiana was extensively reinfested in 1962; despite the interest of the Government in renewing eradication operations in the territory, it had not been possible to do so by the end of 1963.

At the beginning of 1964, the campaign was renewed with the cooperation of PAHO and at the moment of writing the program is in its preparatory phase.

Bahamas - For financial reasons the campaign in this island is still suspended.

Cayman, Turks, and Caicos Islands - In none of these three groups has the campaign yet begun.

Virgin Islands - The campaign in these islands was interrupted in July 1963 and has not yet been renewed.

Montserrat - The reinfestation found in this island in 1962 was considered eliminated during the following year.

However, in February 1964, inspection of 8 localities in Montserrat showed that two of them, Plymouth and Kinsale, both sea-ports, were infested.

These localities were immediately treated, but no information is as yet available on the situation since treatment.

St. Kitts, Nevis and Anguilla - St. Kitts and Nevis continue to be negative. Anguilla is infested, and no mosquito eradication operations are being carried out.

St. Lucia - According to the latest available information, infestation on this island is high and generalized. For financial reasons, campaign operations have been limited to A. aegypti control work in the capital, its airport, and its port. Because of the resistance of the strains of the mosquito to DDT and dieldrin in St. Lucia, kerosene is being used as a larvicide.

St. Vincent - This island continues to be negative.

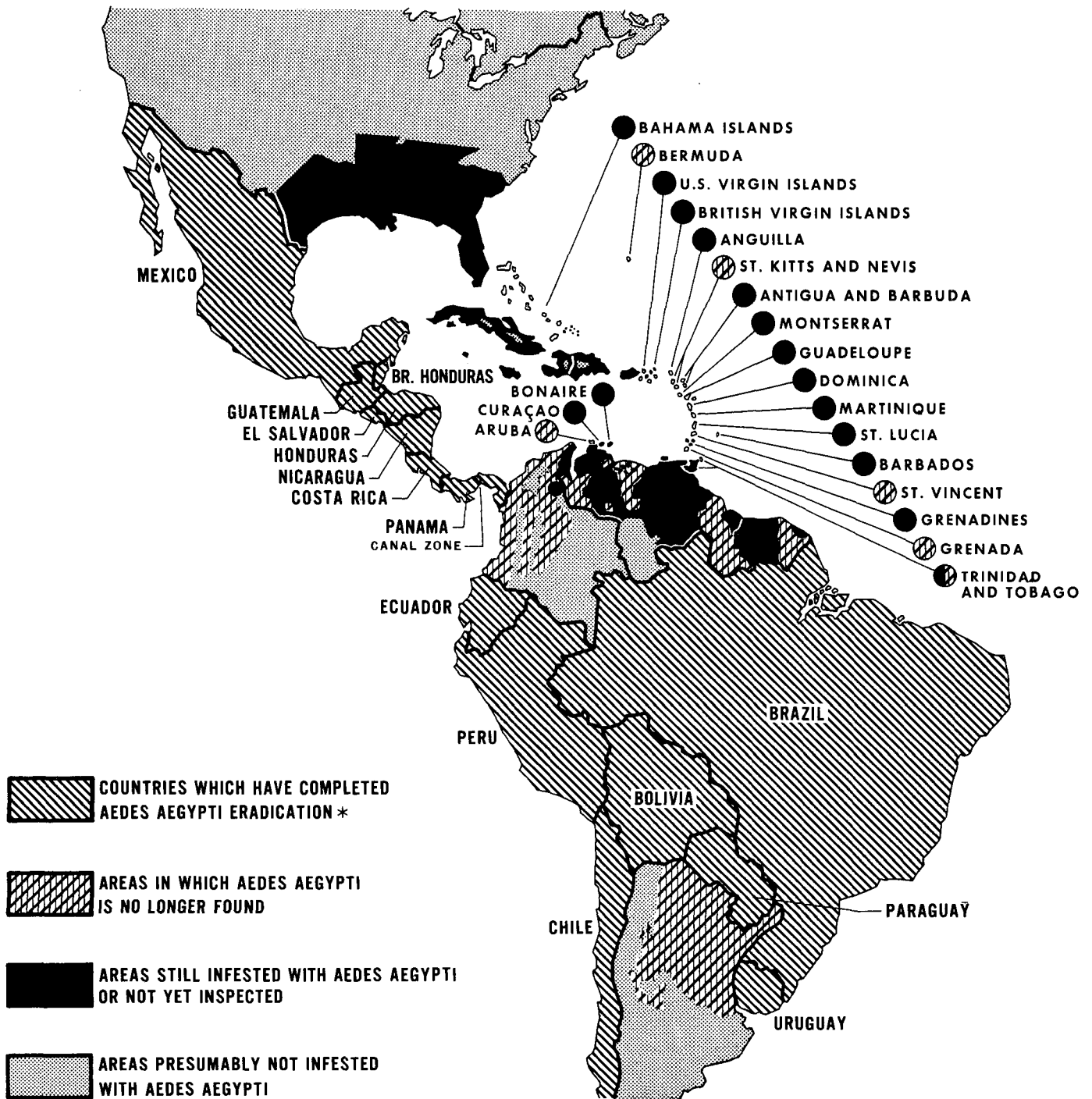
- Enclosures: I. Report for March 1964 on the status of the Aedes aegypti eradication campaign in the Americas.
- II. Map showing the status of the Aedes aegypti eradication campaign - March 1964

REPORT FOR MARCH 1964 ON THE STATUS OF THE Aedes Aegypti ERADICATION CAMPAIGN IN THE AMERICAS

Country		Date		Area assumed		Number	Localities inspected to date			
		Cam- paign begun	Latest inspec- tion	initially infested			Initially positive			
				Total in square kilometers	Percent ins- pected		Total	Treated		
								Total	Still posi- tive	
Argentina	(na)	June 53	Dec. 63	1,000,000	100.0	3,741	165	165	165	-
Bolivia	(e)	June 32	Feb. 55	100,000	100.0	282	65	65	65	-
Brazil	(ev)	Jan. 31	Feb. 64	5,358,822	100.0	268,576	36,119	36,119	36,119	-
Chile	(ev)	June 45	Dec. 63	104,373	100.0	301	48	48	48	-
Colombia	(pa)	Nov. 50	Jan. 64	280,000	100.0	3,801	355	353	353	-
Costa Rica	(e)	April 49	May 55	20,000	100.0	1,342	104	104	104	-
Cuba	(pa)	Mar. 54	Mar. 64	100,000	30.2	1,001	726	523	476	68
Dominican Republic	(p)	Oct. 52	Aug. 62	42,020	80.4	1,420	351	351	319	15
Ecuador	(e)	June 46	Dec. 62	69,454	100.0	2,824	337	337	337	-
El Salvador	(ev)	April 49	Mar. 64	18,675	100.0	909	190	190	190	-
Guatemala	(e)	Jan. 49	June 62	36,423	100.0	2,485	138	138	138	-
Haiti	(p)	Oct. 53	Sept. 58	27,750	49.4	2,379	605	602	435	27
Honduras	(ev)	Sept. 49	Mar. 64	69,929	100.0	600	53	53	53	-
Jamaica	(pa)	Feb. 50	Sept. 63	11,424	100.0	14	12
Mexico	(ev)	Jan. 51	Aug. 63	1,000,000	100.0	4,272	600	600	600	-
Nicaragua	(e)	Jan. 50	June 59	65,263	100.0	3,126	18	18	18	-
Panama	(e)	Feb. 49	June 60	56,246	100.0	2,853	44	44	44	-
Paraguay	(ev)	Jan. 48	Mar. 64	200,000	100.0	1,561	98	98	98	-
Peru	(ev)	Jan. 40	Mar. 64	638,000	100.0	4,320	191	191	191	-
Trinidad and Tobago	(pa)	Jan. 51	Mar. 64	3,108	100.0	128	122	122	122	12
United States	(p)	-	-	777,000	-	-	-	-	-	-
Uruguay	(ev)	Oct. 48	Mar. 64	187,000	100.0	1,020	133	133	133	-
Venezuela	(pa)	June 48	Mar. 64	710,000	71.8	5,763	602	586	555	36
France										
French Guiana	(pa)	May 49	Dec. 63	91,000	100.0	222	55	55	55	1
Guadeloupe	(p)	Jan. 57	Oct. 61	1,619	4.9	53	38	38	27	20
Martinique	(p)	Nov. 53	Mar. 62	1,000	100.0	34	21	19	19	2
Netherlands										
Aruba	(na)	Mar. 52	Mar. 64	174	100.0	9	9	9	9	-
Bonaire	(na)	Sept. 52	Mar. 64	246	100.0	6	6	6	6	-
Curaçao	(pa)	Oct. 51	Mar. 64	448	100.0	5	5	5	5	5
Saba, St. Eustatius	(n)	July 58	Aug. 59	31	100.0	16	15	15	15	-
St. Maarten	(pa)	Dec. 58	Mar. 64	34	100.0	18	15	15	15	15
Surinam	(pa)	Dec. 62	Mar. 64	48,000	30.0	231	74	...	-	-
United Kingdom										
Anguilla	(p)	Apr. 53	June 62	88	100.0	19	19	19	19	18
Antigua	(p)	Aug. 54	Oct. 62	283	100.0	50	47	47	47	25
Bahamas	(pa)	June 54	Mar. 64	11,396	1.3	13	10	10	10	9
Barbados	(pa)	Mar. 54	Mar. 64	171	100.0	99	98	98	98	49
Bermuda	(n)	Jan. 51	1963	53	100.0	9	9	9	9	-
British Guiana	(pa)	Mar. 46	Mar. 64	4,662	100.0	93	21	21	21	2
British Honduras	(e)	Oct. 50	July 59	22,965	100.0	84	2	2	2	-
Cayman Islands	(p)	-	-	259	-	-	-	-	-	-
Dominica	(p)	Feb. 51	Oct. 56	789	50.0	136	66	66	66	16
Grenada	(n)	Nov. 52	July 59	311	100.0	8	8	8	8	-
Grenadinas	(p)	Nov. 52	June 62	65	100.0	7	5	5	5	4
Montserrat	(pa)	May 56	Mar. 64	83	100.0	33	16	16	16	2
St. Kitts-Nevis	(n)	Apr. 53	Jan. 63	308	100.0	43	43	43	43	-
Saint Lucia	(pa)	May 53	May 63	259	100.0	50	50	50	50	37
Saint Vincent	(na)	Mar. 53	Mar. 63	332	100.0	8	8	8	8	-
Turks and Caicos Islands	(p)	-	-	430	-	-	-	-	-	-
Virgin Islands	(pa)	Mar. 60	Feb. 63	174	74.6	23	23	23	23	8
United States										
Canal Zone	(p)	1948	Sept. 60	1,432	100.0	21	2	2	2	-
Puerto Rico	(p)	May 50	Mar. 61	8,896	61.8	481	248	248	248	116
Virgin Islands	(p)	-	-	124	-	-	-	-	-	-

a = Program in operation; e = Eradication completed; n = Negative for A. aegypti; p = positive for A. aegypti; r = Revised; v = With vigilance; - = Zero or no activity; ... = Not available.

STATUS OF THE AEDES AEGYPTI ERADICATION CAMPAIGN MARCH 1964



* ERADICATION CARRIED OUT ACCORDING TO THE STANDARDS ESTABLISHED BY THE PAN AMERICAN HEALTH ORGANIZATION