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Topic 28: STUDY OF THE PRESENT STATUS OF Aedes Aegypti ERADICATION PROGRAMS  
IN THE AMERICAS, THE RESULTS OBTAINED, PROSPECTS, AND EPIDEMIOLOGICAL  
AND FINANCIAL ASPECTS

Since it is impossible to eradicate jungle yellow fever, the presence of yellow fever virus in the Americas represents a constant threat to countries still infested with Aedes aegypti.

Numerous human cases of the disease occur annually in the enzootic areas of South America, and the yellow fever virus periodically invades even larger areas of the Continent, causing epidemic outbreaks.

In view of the ease and speed with which it is possible to cover great distances through air travel nowadays, these human cases could introduce the yellow fever virus into cities that are infested with Aedes aegypti, and thus give rise to the urban cycle of the disease.

In the Americas the eradication of Aedes aegypti in countries with the largest enzootic areas has eliminated the possibility of the occurrence of urban yellow fever and consequently reduced the danger of carrying the virus to other countries. However, the possibility of jungle yellow fever becoming urban can only be eliminated if all countries in the Americas eradicate the urban vector of the disease.

The peace of mind resulting from eradication has been repeatedly confirmed. For example in Brazil, where, during extensive epidemic outbreaks of jungle yellow fever involving hundreds of human cases, it was unnecessary to take any measures to protect urban areas. And again when an epidemic outbreak of jungle yellow fever started in Panama in 1948 and crossed the area of Central America from one end to the other, without endangering its cities and villages. And confirmed again in Peru, where an epidemic outbreak in 1961 took its course without giving rise to fear that the virus would become urban.

On the other hand, the outbreak in Trinidad in 1954 confirmed the danger faced by cities infested with Aedes aegypti and proved that, apart from loss of lives, the financial losses caused by urban yellow fever can exceed the cost of an eradication campaign.

Since 1947, when the Directing Council at its First Meeting in Buenos Aires entrusted the Pan American Sanitary Bureau with the task of stimulating and coordinating Aedes aegypti eradication in the Americas, the Bureau has made every possible effort, within budgetary limitations, to collaborate with the countries of this Region in their campaigns against the vector.

In the fourteen years elapsed since the Directing Council adopted this decision, many of the countries and territories have achieved Aedes aegypti eradication, and in many others the campaigns under way are in varying stages of development. But there are still countries and territories that have not even begun their campaigns, or have interrupted them, or in which progress is very slow and results unsatisfactory.

As the aegypti-free areas increase, there is also an increasing need to initiate programs where as yet none exist and to accelerate those programs that are lagging behind, because the latter hold the threat of becoming sources of reinfestation of other countries and territories that have already eradicated the mosquito at the cost of great sacrifice.

The Governing Bodies of the Organization have placed repeated emphasis on the need for countries still infested to make every effort possible to eradicate A. aegypti, as it is the only way to prevent the eradication program in the Americas from becoming indefinitely prolonged and to run the risk of losing everything that has been achieved so far.

The countries that still have A. aegypti will find that it will be well worth their while to make a final effort toward Continent-wide eradication, which will undoubtedly bring them highly rewarding returns.

The problem persists mainly in the United States and in certain parts of the Caribbean Area, as shown by the ensuing summary of the present status of the program in each country and territory.

Owing to geographic, economic, and administrative reasons, in the Caribbean Area it is difficult, despite efforts being made, to achieve the necessary coordination for conducting the programs in the various territories at more or less the same time, even if that would be the way to solve the problem within a period of time and at a cost that is reasonable.

Under the present circumstances, however, even if campaign results in individual islands or groups of islands should be satisfactory, it is difficult to forecast when the Caribbean Area, will achieved eradication owing to the facility with which these territories are able to reinfest each other.

The summary that follows does not include countries and territories that are free from A. aegypti.

### Argentina

This program has had less field personnel at its disposal than was originally planned. An improvement in this situation is expected soon, which will make it possible to intensify the activities now under way.

Considering the number of squads available, progress has been satisfactory and the results good. Aedes aegypti has already been eliminated from the Provinces of Salta, Tucuman, Catamarca, Santiago del Estero, Formosa, Chaco, Corrientes, Misiones, and Entre Ríos, all of which are located in the tropical and sub-tropical areas where conditions favor the development of the vector. Work is also fairly well advanced in the Provinces of Santa Fé, Córdoba, La Rioja, and in the Federal District, which includes Buenos Aires and surrounding areas.

The initial survey of worked areas covered 31,142 localities, 164 of which were found with aegypti; 161 of these are now free from the mosquito.

As the work advances southward, the areas found with aegypti become less frequent, and according to data covering the last months, no mosquito will probably be found beyond the 35th parallel, south of the present working area.

If this should be the case and with the increased personnel expected this year, eradication in Argentina could be achieved by the end of 1963.

### Cuba

This program was begun in 1954 but owing to limited funds and insufficient personnel little in the way of mosquito eradication could be done in the first five years.

With the exception of some almost uninhabited coastal areas and of the highest mountainous parts of the country, Cuba has approximately 100,000 square kilometers of territory with favorable conditions for the development and propagation of A. aegypti. According to present available data, the island may be considered to be completely infested with the mosquito.

The Government increased the campaign budget in 1959 and eradication activities have been considerably intensified since then.

In accordance with the plan of operations, campaign activities from 1959 to date were confined to 23 municipalities in Havana Province, including Havana, Marianao, Guanabacoa, and Regla, which make up the area of Greater Havana.

These 23 municipalities cover an area of less than 2,000 square kilometers, that is, slightly over one per cent of the initially infested area of the country, yet they constitute a network of cities, villages, and rural settlements with approximately 550,000 houses, a high infestation rate, and very favorable conditions for propagating A. aegypti. Eradication of the mosquito in this area would solve 30 per cent of the aegypti problem in Cuba.

Although progress attained in the entire area is satisfactory, the results achieved in some of the areas of Greater Havana until December of last year were not so good because of the low DDT susceptibility of A. aegypti. With the change from DDT to dieldrin, the mosquito is now being rapidly eliminated. In the remaining municipalities, where the results obtained with DDT were always good, the same insecticide continues to be used.

From 1954 to date the initial survey covered 225 localities; 158 of these were found with aegypti and treated; 51 of the latter are now negative.

If work progresses at the same rate and no major problems arise in the future, Cuba may be free of the mosquito by the end of 1964.

#### Dominican Republic

Eradication activities in this country were begun in 1952 but progress until now has been very slow owing to administrative reasons.

The necessary facilities for intensifying the program are expected to be available very soon in order that eradication may be completed within a reasonable period of time.

#### Haiti

The program in this country was interrupted in 1958 owing to financial reasons and up to the present it has not been possible to resume work.

Ecologic conditions in Haiti are very favorable to A. aegypti and according to the situation existing at the time the program was suspended, the infestation rate in the country must be very high and extensive at the present time.

The program is expected to be resumed soon.

### Mexico

This program is in its final stage. The initially infested areas in the southern and central part of the country are now considered to be free of the mosquito. Only small northern areas in the vicinity of the United States Border still lack inspection under the initial survey. The last locality found with aegypti, Piedras Negras in Coahuila State, is in the process of being sprayed with DDT.

In October 1961 the Government intends to begin the special verification of the entire initially infested area of the country in collaboration with PAHO. This verification should be completed by the end of 1962 and, if the results are satisfactory, Mexico may declare the mosquito eradicated from its territory at that time.

### United States of America

According to the latest data available, aegypti-infested areas in the country and in the territories under its administration include the States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, South Carolina, Tennessee, part of Texas, and Puerto Rico and the Virgin Islands.

Under the pilot project begun in Pensacola, Florida, in 1957 studies continued on work methods, unit costs, and the feasibility of implementing a large-scale program.

Upon completion of an evaluation of the results of this project, it will be possible to estimate the cost of aegypti eradication in the country, Puerto Rico, and the Virgin Islands and the possibilities of conducting a program in the territories will become known.

### Venezuela

The Government intensified this program considerably in 1959, with the collaboration of PAHO.

Of the 5,041 localities inspected since eradication work was begun, 509 were found with aegypti; of the latter, 402 are now negative according to the last verification made.

In conformity with the plan of operations being followed, it is expected that eradication of the mosquito will be completed in Venezuela by June 1964.

### British Guiana

Aedes aegypti is considered to be eliminated from this territory. It lacks only the special verification to confirm eradication.

Surinam

A preliminary survey made by the Government in collaboration with PAHO revealed extensive and high infestation in this territory. For economic reasons, however, it has not been possible to implement an eradication program to date.

Aedes aegypti resistance to DDT was verified in Paramaribo.

Bahamas

This program lacks the funds and personnel necessary to cope with the aegypti problem in all islands of the group, and the results being achieved are therefore not satisfactory. There is low aegypti susceptibility to DDT.

Trinidad and Tobago

These two islands have been considered negative for some time, but in April 1961 aegypti was found in one locality in Trinidad.

A special verification with the collaboration of PAHO is under way in the remaining territory. No aegypti was found to date.

Jamaica

In this island the eradication activities were being developed in a deficient manner and the results were not satisfactory. The Government suspended the program, which will be resumed after suitable reorganization.

Barbados

This campaign is somewhat delayed and results in the field, especially from the administrative point of view, have not been satisfactory.

There is aegypti resistance to DDT in this island also.

British Virgin Islands

The program was begun early last year with the cooperation of PAHO. The method of intradomiciliary sprayings is being used, and it is hoped that all islands of this group will be free from aegypti within a short time.

St. Kitts, Nevis, and Anguilla

The islands of St. Kitts and Nevis have already become negative. Work continues in Anguilla to complete aegypti elimination.

Montserrat

Although the island was negative for over a year, it became reinfested early last year. The necessary elimination measures were taken and, according to the latest data available, the island is once again negative.

Antigua and Barbados

These two islands were negative and under surveillance for a long time, but in June 1961 Antigua was found to be reinfested.

Dominica

There is no eradication program in this island. The Government has agreed to a survey, in cooperation with PAHO, to evaluate present infestation before drawing up the program.

St. Lucia

After being free from aegypti for a long time, the island became reinfested. Reinfestation was eliminated early last year. After that the island remained negative and under surveillance up to four months ago, when it again became reinfested, which indicates the need for placing all neighboring islands under surveillance until they are proven free from the mosquito.

St. Vincent and Bequia

All islands in this group are negative and under surveillance.

Grenada and the Grenadines

In this group, Grenada is negative but Carriacou and Petit Martinique continue to be positive. Aegypti resistance to both DDT and dieldrin was verified in Carriacou.

Bermuda

The entire territory is considered negative, lacking only the final verification.

Caiman, Turk, and Caicos

In these three groups of islands, no program has been initiated as yet.

Guadeloupe

This program was begun in 1956 with PAHO collaboration. The results being achieved are satisfactory, especially from the administrative point of view. A. aegypti is highly resistant to DDT in this island.

Martinique

There is no specific campaign against aegypti in this island. Local authorities are conducting a campaign against insects in general, but the results against aegypti are poor.

St. Martin (French part)

This territory, which is administered by Guadeloupe, was treated against aegypti in 1959, but the latest data show that it continues to be infested.

Netherlands Antilles

The islands of Aruba, Bonaire, Saba, and St. Eustace are already negative and only lack final special verification. In 1961 St. Martin was found to be reinfested.

The program in Curaçao is in its final stage. Of the 155 initially positive population settlements, only three remain with aegypti.

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The attached table shows the figures for the program in each country and territory, and the attached map gives a global view of the results obtained to date and the work still remaining to be done in order to achieve A. aegypti eradication in the Americas.

Annexes: -Report for June 1961 on the Aedes aegypti eradication campaign in the Americas, from its beginning.

-Map: Status of the Aedes aegypti eradication campaign  
- June 1961

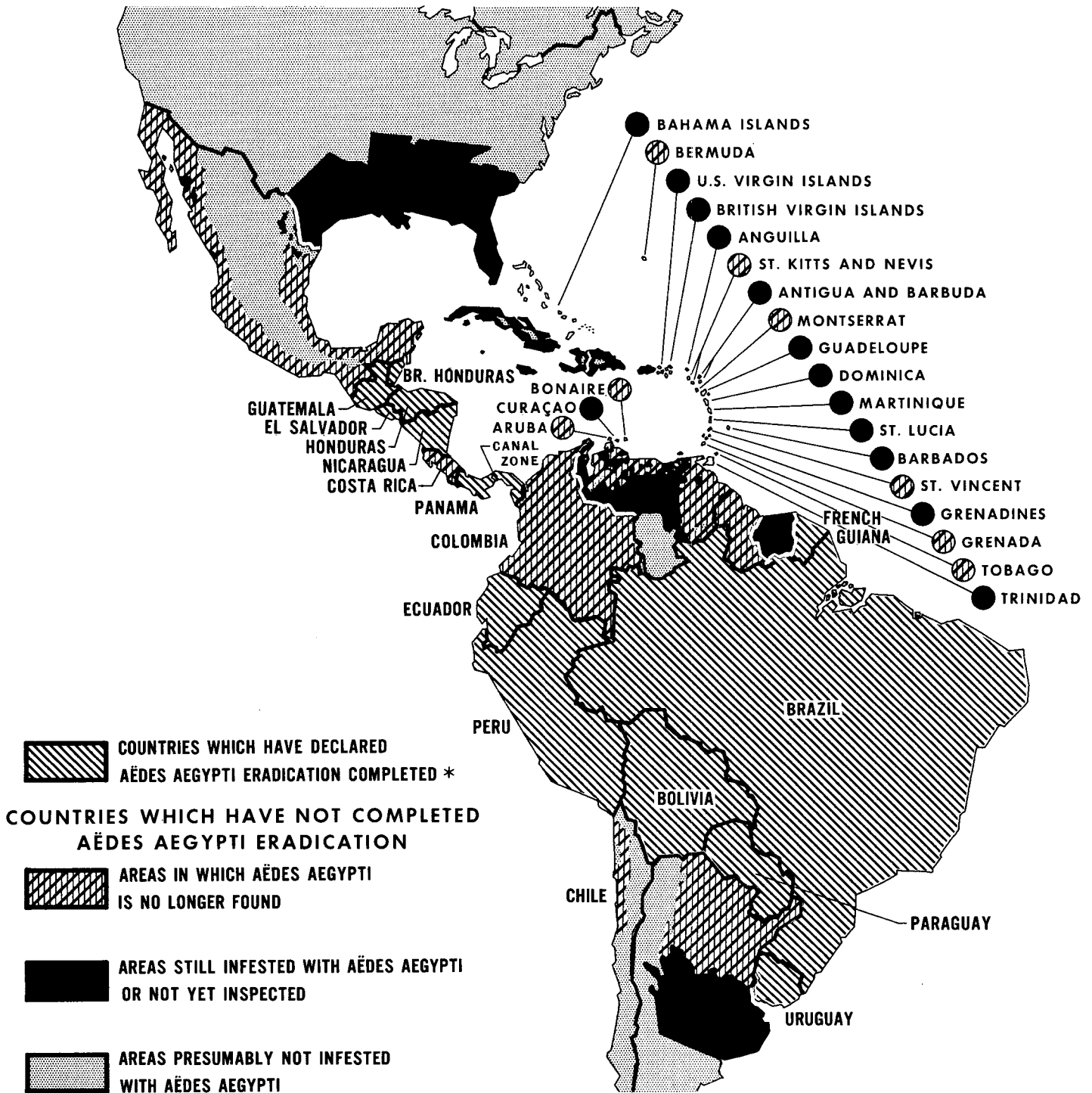


REPORT FOR JUNE 1961 ON THE AEDES AEGYPTI ERADICATION CAMPAIGN  
IN THE AMERICAS, FROM ITS BEGINNING

Country	Date started	Latest report available	Area assumed initially infested (Km <sup>2</sup> )		Localities inspected					Present stage
			Total	Inspected (%)	Number	Initially positive				
						Total	Treated	Verified		
								Number	Still positive	
Argentina	IV.58	VI.61	1,500,000	53.1	3,142	164	162	161	-	A
Bolivia	VI.32	III.61	100,000	100.0	282	65	65	65	-	E
Brazil	I.31	VI.61	5,358,822	100.0	270,588	36,119	36,119	36,119	-	E
Chile	VI.45	IV.61	104,373	100.0	301	48	48	48	-	N
Colombia	XI.50	VI.61	280,000	100.0	3,801	354	354	354	-	N
Costa Rica	IV.49	XII.60	20,000	100.0	1,342	104	104	104	-	N
Cuba	III.54	VI.61	100,000	2.2	225	158	158	88	37	A
Dominican Republic	X.52	VI.61	42,020	80.4	1,415	351	351	317	15	A
Ecuador	VI.46	VI.61	69,454	100.0	2,824	337	337	337	-	E
El Salvador	IV.49	VI.61	18,675	100.0	909	190	190	190	-	E
Guatemala	I.49	XII.60	36,423	100.0	2,485	138	138	138	-	E
Haiti	X.53	IX.58	27,750	49.4	2,379	605	602	435	27	I
Honduras	IX.49	VI.61	69,929	100.0	600	53	53	53	-	E
Mexico	I.51	VI.61	1,000,000	96.5	3,358	597	596	592	-	A
Nicaragua	I.50	VI.61	65,263	100.0	3,126	18	18	18	-	E
Panama	II.49	VI.60	56,246	100.0	2,853	44	44	44	-	E
Paraguay	I.48	III.61	200,000	100.0	1,561	98	98	98	-	E
Peru	I.40	VI.61	638,000	100.0	4,320	191	191	191	-	E
United States	-	-	777,000	-	-	-	-	-	-	P
Uruguay	X.48	VI.61	187,000	100.0	1,020	133	133	133	-	E
Venezuela	VI.48	VI.61	600,000	85.0	5,041	509	498	435	33	A
France	V.49	IV.60	91,000	100.0	222	55	22	22	-	E
French Guiana	I.57	VI.61	1,619	4.9	53	38	38	27	19	A
Guadeloupe	IX.53	VI.61	1,080	100.0	34	21	7	7	1	A
Martinique	III.52	VI.61	174	100.0	9	9	9	9	-	N
Netherlands	IX.52	VI.61	246	100.0	6	6	6	6	-	N
Aruba	X.51	VI.61	448	100.0	155	155	155	155	-	N
Bonaire	VII.58	II.61	60	100.0	34	30	30	30	6	A
Curaçao	-	XII.60	48,000	...	231	74	-	-	-	P
Saba, St. Eust., St. Martin	VIII.54	VI.61	283	100.0	50	47	47	47	1	A
Surinam	VI.54	VI.61	11,396	1.3	13	11	11	11	9	A
United Kingdom	III.54	V.61	171	100.0	95	95	95	95	13	A
Antigua	I.51	XII.51	53	100.0	59	9	9	9	-	N
Bahamas	III.46	VI.61	4,662	100.0	93	21	21	21	-	N
Barbados	X.50	IV.61	22,965	100.0	84	2	2	2	-	E
Bermuda	-	-	689	-	-	-	-	-	-	P
British Guiana	II.51	X.56	789	90.0	136	66	66	66	16	I
British Honduras	XI.52	VII.59	311	100.0	8	8	8	8	-	N
Cayman-Turks-Caicos	XI.52	VII.59	65	100.0	7	5	5	5	1	A
Dominica	II.50	III.61	11,424	77.3	78	57	57	42	21	A
Grenada	V.56	VI.61	83	100.0	33	16	16	16	-	N
Grenadines	V.50	VI.61	396	100.0	62	33	33	33	17	A
Jamaica	V.53	II.61	259	100.0	50	50	50	50	1	A
Montserrat	III.53	III.59	332	100.0	8	8	8	8	-	N
St. Kitts-Nevis-Anguilla	I.51	III.61	3,108	100.0	128	122	122	122	-	N
Saint Lucia	III.60	I.61	174	74.6	23	23	23	23	14	A
Saint Vincent	1948	IX.60	1,432	100.0	21	2	2	2	-	E
Trinidad and Tobago	V.50	III.61	8,896	61.8	481	248	248	248	116	A
Virgin Islands	-	-	124	-	-	-	-	-	-	P

P = Preparatory; A = Active; N = Negative for *A. aegypti*; E = *A. aegypti* eradicated;  
I = Interrupted programs; - = Zero or no activity; ... = data not available.

# STATUS OF THE AËDES AEGYPTI ERADICATION CAMPAIGN JUNE 1961



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