



VECTOR BIOLOGY & CONTROL

Vector Biology & Control Project
1611 North Kent Street, Suite 503
Arlington, Virginia 22209
(703) 527-6500

Telex: 248812 (MSCI UR)
Cable: MSCI Washington, D.C.

PN-AY-1107
PN 52850

DRACUNCULIASIS
IN THE UNITED REPUBLIC OF CAMEROON II:
BACKGROUND/REFERENCE INFORMATION

July 7 - August 15, 1986

by

Frank Richards, Jr., M.D.

CE-010

11

Author

Frank Richards, Jr., M.D. is a medical epidemiologist with Division of Parasitic Diseases, Centers for Infectious Diseases, Centers for Disease Control.

Acknowledgement

Preparation of this document was sponsored by the Vector Biology & Control Project under Contract (No. DPE-5948-C-00-5044-00) to Medical Service Consultants, Inc., Arlington, Virginia, U.S.A., for the Agency for International Development, Office of Health, Bureau of Science and Technology.

TABLE OF CONTENTS

Acknowledgements.....	4
Abbreviations Used in the Report.....	5
1. Executive Summary.....	6
2. Recommendations: Overview of a National Plan of Action (POA).....	9
3. Introduction.....	10
3.1 The Life Cycle of <u>Dracunculus medinensis</u>	
3.2 Symptoms, General Epidemiological Features, and Control of Dracunculiasis	
3.3 The Strategy for Control and Elimination of Dracunculiasis	
3.4 A National Plan of Action	
4. Background Information on the United Republic of Cameroon (URC).....	12
4.1 Geography	
4.2 Demography	
4.3 Administration	
5. Government Institutions Relevant to a POA.....	20
5.1 An Overview of the Health Care Delivery System	
5.2 The Division of Preventive Medicine and Public Hygiene	
5.3 Agencies Responsible for Water Supply	
6. Dracunculiasis in the URC.....	25
6.1 A Review of Published Literature	
6.2 The 1984 Questionnaire Survey	
6.3 Unpublished Reports by the MOH	
6.4 Passive Case Reporting of Dracunculiasis	
6.5 Active Case Detection	
6.6 Conclusions	
7. The Mayo Sava Focus of Dracunculiasis.....	55
7.1 Geography, Demography and Water Supply	
7.2 The Control Program of the University of Bordeaux	
7.3 Rapid Epidemiological Assessments during the Course of the Consultancy	
7.4 Local Water Projects	

TABLE OF CONTENTS (cont.)

ANNEXES

1. Details of Mission
 - Consultant's Scope of Work
 - Dates of Travel and Persons Met
2. World Health Assembly Resolution
3. The National Water Committee
 - Presidential Decree Forming the NWC
 - Minutes of the First NWC Meeting
4. Surveillance Forms Used by the MOH
 - 1984 Questionnaire Survey
 - MOH/OCEAC Reporting Form
5. Study Protocols
 - Prevalence Surveys and Familial Clustering of Dracunculiasis in the Mandara Mountains
 - Effect of Abate Treatment of Drinking Water in an Endemic Area for Dracunculiasis in Northern Cameroon
6. Some Ministry of Health Documents related to the Dracunculiasis Initiative
 - Programme for the Surveillance and Control of Dracunculiasis
 - Reports by Dr. Kollo Basile on GWD in Mayo Sava
 - Report of a Mission to Investigate GWD in Limbe
7. Photographs from Mayo Sava
8. References Used in this Report

ACKNOWLEDGEMENTS

Preparation of this document was sponsored by the Vector Biology & Control Project under Contract (No. DPE-5948-C-00-5044-00) to Medical Service Consultants, Inc., Arlington, Virginia, U.S.A., for the Agency for International Development, Office of Health, Bureau for Science and Technology.

The author would like to note that the body of this report was prepared from information gathered by, or in participation with, the following coauthors:

Ndeso Sylvester Atanga, BSc, MPH
Deputy Chief of Epidemiology
Epidemiology and Malaria Service
Department of Preventive Medicine and Public Hygiene
Ministry of Health
Yaounde, Cameroon

Kollo Basile, MD
Preventive Medical Officer
Department of Preventive Medicine and Public Hygiene
Mayo Sava Division
Province of the Extreme North
Ministry of Public Health
Mora, Cameroon

Deborah Agbor-Tabi, MPH
Epidemiologist
Epidemiology and Malaria Service
Department of Preventive Medicine and Public Hygiene
Ministry of Health
Yaounde, Cameroon

Peter-Charles Mafiamba, MD
Technical Advisor to the Minister
Ministry of Health
Yaounde, Cameroon

ABBREVIATIONS USED IN THIS REPORT

CARE.....	Corporative for American Relief Everywhere
CDC.....	Cameroon Development Corporation
CDS.....	Community Development Service, Ministry of Agriculture
DPMPH.....	Division of Preventive Medicine and Public Hygiene
EPI.....	Expanded Program in Immunization
FONADER.....	Fonds National de Developpement Rural
FSAR.....	Special Fund for Rural Action
GTZ.....	Gesellschaft fur Technische Zusammenarbeit, West Germany
GW.....	Guinea Worm (<u>Dracunculus medinensis</u>)
GWD.....	Guinea Worm Disease (<u>Dracunculiasis</u>)
IWSSD.....	International Water Supply and Sanitation Decade
MOA.....	Ministry of Agriculture
MOH.....	Ministry of Health
National Plan...	5th Plan Quinquennal de Developpement Economique, Social, et Culturel, 1981-86. Ministry of Economy and Plan (11/81)
NGO.....	Non-Government Organization
NWC.....	National Water Committee
OCEAC.....	Organization de Coordination pour la Lutte contre les Endemies en Afrique Centrale
PMO.....	Preventive Medical Officer (DPMPH)
PO.....	Project Officer of the Plan of Action
POA.....	Plan of Action
SEMRY.....	Societe d'Expansion et Modernisation de la Riziculture de Yagoua
UNICEF.....	United Nations International Children's Emergency Fund
URC.....	United Republic of Cameroon
USAID.....	United States Agency for International Development
WHO.....	World Health Organization
WASH.....	Water and Sanitation for Health Project

1. EXECUTIVE SUMMARY

1.1. The Ministry of Health (MOH) of the United Republic of Cameroon (URC) is in a position to accurately delimit and then control or eliminate the parasite Dracunculus medinensis, causing human dracunculiasis (also known as guinea worm disease, 'Ver du Guinee', and Filar Medine). For many years the MOH has had an interest in determining the extent of this infection within the country, and during 1986 this interest in guinea worm disease (GWD) has intensified. The URC cosponsored a World Health Assembly resolution (39.21) for the elimination of dracunculiasis, sent representatives to Niamey to attend the First Regional African Workshop on Dracunculiasis, and hosted a consultant to assist in elaborating a National Plan of Action. Surveillance information suggests that GWD is rare in the URC, and limited to foci located principally in the Extreme North and North Provinces. This localization simplifies control strategies, which can be devised and supervised at a local operational level based on the needs of that area.

1.2. From official surveillance data collected through MOH and Organization de Coordination pour la Lutte contre les Endemies en Afrique Centrale (OCEAC) reporting systems, and actual visits to some of the reported endemic areas, I can confirm that GWD occurs primarily in the Extreme North and North Provinces. There are unconfirmed reports of GWD in Adamaoua and South-West Provinces (Figure 1.1). The estimated number of Cameroonians who reside in areas with known or suspected dracunculiasis transmission is 1,378,770, or 13.3% of the population of the URC. However, considerable improvement in surveillance systems is required to determine the exact numbers of persons at risk, or to delimit the precise areas to target for control efforts.

The official statistics on dracunculiasis in the URC are based primarily on passive case detection. These data are supplemented by anecdotes and limited active case detection efforts. We found that there is marked underreporting from the known endemic areas in Mayo Sava (Extreme North Province), but more surprisingly, the passive case reporting system shows striking overreporting. Causes for such overreporting include: apparent mistakes in data key punching on computers, mislabeling or misreading of report forms at all levels of the surveillance hierarchy, and misdiagnosis by nurses and physicians.

1.3. Historical evidence collected from chiefs, missionaries, researchers, and physicians suggests that in some of the endemic areas the incidence of GWD has markedly declined in recent years. This decline might be explained by increasing use of improved water supplies or recent drought.

1.4. Dracunculiasis was found to be highly prevalent in the Mandara Mountains of the Mayo Sava Division, Extreme North Province. In a house-to-house survey performed in mid-July 1986, in four villages of this division, I found 138 of 446 (31%) persons infected, with prevalence in villages ranging from 6.6-45.4%. Patients had an average of 1.6 emergent worms, and some disability was observed in 20-40% of those afflicted. Therefore, GWD should be considered as one of the important preventable health problems in Mayo Sava, and control measures need to be instituted in this division, and possibly others, in the URC.

The infection tends to occur primarily south of Mora, in the mountains and adjacent plains. Mountain and plain foci represent different

ecological zones of transmission. Population movements stimulated by community development and agricultural programs may be responsible for recent introduction of GWD in new areas.

1.5. Since 1983 Professor Christian Ripert of the University of Bordeaux has directed attempts to control GWD in the mountains of Mayo Sava. French medical students and various missionary groups in the Mora vicinity have participated in a program of seasonal applications of the larvacide temephos (ABATE™*) in an attempt to reduce intermediate host populations (Cyclops) in local water sources. Transmission of dracunculiasis persists. Three of the four infected villages I surveyed in mid-July 1986, were located in one such "control" area. Due to lack of available or systematic data to assess disease incidence, it was impossible to determine if there has been any impact on dracunculiasis in treated areas.

1.6. Resources exist to conduct a pilot control program in Mayo Sava. Government and non-government projects in this division utilize nurses, students, community workers, and other trained personnel to visit relatively remote villages. These personnel could be used to support active surveillance for dracunculiasis. In this way, most, if not all, endemic villages in the division could be identified. Divisional and provincial government authorities contract various organizations to construct wells, forages, and other safe and permanent water sources. If such activities were targeted on endemic villages, a significant impact on GWD incidence could be quickly realized in some areas. Water supply agencies expressed interest in a health input during the decision-making processes pertaining to the placement of new water supplies.

Health education projects are already components of some well-drilling programs (particularly CARE) operating in the endemic areas. A GWD component could be incorporated into those programs.

*Use of trade names and commercial sources is for identification only and does not constitute endorsements by the Public Health Service or the U.S. Department of Health and Human Services.

2. RECOMMENDATIONS: OVERVIEW OF A NATIONAL PLAN OF ACTION

I recommend that the efforts in the URC be addressed in two phases. The detailed recommendations of each phase are presented in a companion document: DRACUNCULIASIS IN THE UNITED REPUBLIC OF CAMEROON I: A PROPOSAL FOR A NATIONAL PLAN OF ACTION FOR DRACUNCULIASIS CONTROL AND ELIMINATION (Volume I).

2.1. THE FIRST PHASE (Phase I: 1987-1990): The most important goals in Phase I are the acceptance of a POA, the completion of definitive national surveillance activities and the development of a pilot control program in Mayo Sava Divison, Extreme North Province.

- 2.1.1. A governmental resolution should be made that dracunculiasis control and elimination is necessary, particularly in the northern regions of the URC. This resolution should be accompanied by the acceptance of a National Plan of Action (POA). The POA should establish a realistic timetable for accomplishing defined regional, national and international goals. It should designate POs from the MOH and MOA who will be responsible for the coordination of the POA. The National Water Committee will monitor progress of the POA.
- 2.1.2. During Phase I, surveillance efforts should be strengthened to delineate the extent of GWD by division, and if possible, district, throughout the URC. This should be accomplished by confirmation of case reports received through the passive surveillance system, through mail, telephone, telegraph, radio communications, or preferably, missions by Yaounde or local DPMPH personnel.
- 2.1.3. A pilot project for control and operational research, based on utilization of existing institutions should be initiated in the division of Mayo Sava. By the completion of Phase I, GWD should be eliminated from the area. The program should be designed to permit rigorous evaluation of control efforts. A training component should be provided to develop expertise among the POs in executing and evaluating control in other regions in the country determined to be endemic for GWD.

2.2. THE SECOND PHASE (Phase II: 1990-1993) of the POA should consist of an extension of control efforts in Mayo Sava to other areas with dracunculiasis.

- 2.2.1. A meeting should be held of health professionals and water engineering authorities from provinces and divisions with recognized GWD foci to report on the control principles of the Mayo Sava Project and to formulate control programs in other endemic localities throughout the URC.
- 2.2.2. New control activities appropriate for local conditions should be implemented in the remaining transmission sites in the URC.
- 2.2.3. Collaborative efforts should be developed with other endemic countries bordering the URC in order to prevent reintroduction of the infection.

3. INTRODUCTION

This is the final report of a consultant epidemiologist from the Centers for Disease Control, who visited the United Republic of Cameroon in July and August of 1986, at the request of the Cameroonian Ministry of Health (MOH) and USAID/Yaounde. This technical assistance was sponsored by the Vector Biology & Control Project under contract to the A.I.D. Office of Health, Bureau for Science and Technology. The purpose of the mission was to assist the MOH in developing a proposal for a national plan of action for control and elimination of GWD in the URC. The detailed scope of work is found in Annex 1. The findings of this report are the result of a joint effort involving the following MOH personnel: Mr. Sylvester Ndeso Atanga, Dr. Kollo Basile, Ms. Deborah Agbor-Tabi, and Dr. Peter-Charles Mafiamba. The detailed recommendations generated by this consultancy are presented in a companion document: "Control of Dracunculiasis in the United Republic of Cameroon II: A proposal for a National Plan of Action for Dracunculiasis Control and Elimination."

3.1. THE LIFE CYCLE OF DRACUNCULUS MEDINENSIS

Human dracunculiasis (Dracuntiasis, guinea worm disease, Ver de Guinee, Filaire de Medine) is caused by the parasitic worm D. medinensis. Infection with this agent afflicts an estimated 10 million persons annually in Asia, Arabia, and Africa. Human infection is acquired by ingestion of water contaminated with a microcrustacean of the genus Cyclops, which acts as the intermediate host for D. medinensis. Cyclops is usually found in wells, ponds, and other stagnant water bodies. Infectious larvae of the parasite contained within the cyclops are released into the human intestine, from which they migrate to deep subcutaneous tissues. During a one-year incubation period no symptoms occur, but when the worms reach maturity, the now lengthy (one meter) gravid female worm migrates to a position under the skin. There, most often in the lower extremities, she elicits a painful blister which eventually bursts, exposing the head of the worm. Upon immersion of the limb in water, the worm ruptures, releasing many thousands of larvae. The female dies shortly thereafter, although it remains for the patient to slowly extract her body from his person. The larvae may be ingested by cyclops, where they mature to the infectious stage (usually over a period of two to three weeks) in the body cavity of the crustacean. The larvae can continue the life cycle by infecting the next human host that ingests them in drinking water.

3.2. SYMPTOMS, GENERAL EPIDEMIOLOGICAL FEATURES, AND CONTROL

Guinea worm disease (GWD) is symptomatic only when the female worm emerges from underneath the skin. The open ulceration and physical extraction of the parasite usually lasts from one to three months. Pain and secondary bacterial infection often prevent the patient from standing or walking. In some cases, deep abscesses, septic arthritis, and tetanus ensue due to the chronicity of the open lesion. Fatalities are rare, but permanent disability occurs in an estimated one percent of cases.

Seasonality is an important aspect of the infection's epidemiology. Transmission from man to cyclops and from cyclops to man frequently takes place over just a few months of the year. The transmission season is limited by the presence of shallow pools of stagnant water. These are most influenced by rainfall, and tend to occur during the rainy season in arid areas (when surface water is at its maximum, and cyclops populations bloom), and during the dry season in regions with higher rainfall (when rivers and streams form

shallow, non-flowing pools). GWD is generally considered an infection of dry regions, where water sources are few, and shared by many.

The seasonal disability among the almost exclusively rural victims has dramatic economic impact. In West Africa, GWD incidence may reach its maximum during the labor intensive rainy season, adversely affecting agricultural output in affected villages to the probable detriment of the economic and nutritional status of the community.

There is no evidence of acquired immunity to dracunculiasis, and the endemic communities usually suffer annual attacks. However, the infection is self-limiting because the worm dies after the year's incubation period; a person must be reinfected annually for the cycle to continue. Nonhuman hosts are not believed to be involved in transmission of the disease to humans. Thus, interruption of transmission for only one year can theoretically eradicate the disease from a community.

There are no effective drugs for preventing or treating infection by D. medinensis. Dracunculiasis transmission can be avoided by: (1) the provision of uncontaminated drinking water; (2) treatment of contaminated water by periodic addition of chemicals (temephos) to control populations of the intermediate host; (3) education of villagers to boil or filter their drinking water (personal prophylaxis); or (4) keeping infected persons with active lesions from entering sources of drinking water, by covering or walling the perimeters of water sources.

3.3. THE STRATEGY FOR CONTROL AND ELIMINATION OF DRACUNCULIASIS

It has been suggested that International Drinking Water Supply and Sanitation Decade (IDWSSD) (1981-1990) use the incidence of dracunculiasis as an indicator of the effectiveness of efforts to provide potable water. The strategies for control of GWD have been established, and some endemic countries, notably India, have ambitious national programs underway. The strategy endorsed by the 39th World Health Assembly in May 1986 (Annex 2) includes: (1) enhanced surveillance to identify infected areas and villages, (2) designation of endemic areas as priority for new sources of drinking water, or for chemical Cyclops control, and (3) community health education programs to develop community understanding of the GW life-cycle, personal prophylaxis, and prevention of contamination of drinking water. A key element in the global strategy to control GWD is the coordination, in each endemic country, of existing government and/or donor health, development, and water activities. A vital first step is the preparation of a national plan of action.

4. BACKGROUND INFORMATION ON THE UNITED REPUBLIC OF CAMEROON

4.1. GEOGRAPHY

The United Republic of Cameroon covers an area of 465,000 square kilometers in west central Africa. It is bordered by the Gulf of Guinea (Atlantic Ocean) to the southwest, Nigeria to the northwest, Chad to the northeast, the Central African Republic to the east, Congo (Brazzaville) to the southeast, and Gabon and Equatorial Guinea to the south. The URC can be divided into four geographically distinct regions: the south, the central, the north, and the west. The south consists of coastal plains which rapidly become a densely forested plateau with an average elevation of a little less than 300 meters. The central region exists from the Sanaga River in the south to the Benoue River in the north. It consists of a central transitional plateau which progressively rises to the north to elevations of about 1500 meters. To the north, this savannah plain slopes downward as it approaches the Lake Chad basin. In the west, and along the border with Nigeria, the relief is mountainous as a result of a volcanic range that extends northward from the island of Fernando Po, in the Gulf of Guinea. This volcanic rift separates the URC from Nigeria with various mountain ranges culminating in the Mendera Mountains of the northwest.

Rainfall decreases from south to north. In the south there are four seasons, a light rainy season from May to June, a short dry season from July to October, a heavy rainy season from October to November, and a long dry season from December to May. In some areas of the south, rainfall may be as much as 400 inches. The north, with a mean annual rainfall as low as 15 inches, has only one dry season--October to May--and a rainy season from June to September.

4.2. DEMOGRAPHY

The last census of the country was in 1976. Based on those figures and the annual growth rate country (2.6%), the estimated population of the URC in 1985 was 10,000,000. Fifty percent of the population is female and 43% of the population is below 15 years of age. In 1976, 28.6% of the population resided in urban areas, but this has increased to an estimated 38.5% for 1986. The national birth rate is 45%, and rate of mortality 20.4%.

Cameroon has been described as a tribal crossroads because of its more than 100 different ethnic groups. There are three major linguistic groups--the Bantu-speaking peoples of the south, the Sudanic-speaking people of the north and those who speak the Bantu dialects of the east and west. The population of the URC is characterized by its great mobility, which is seasonal in relation to harvest cycling. However, there has been a trend for population resettlement from north to south, which has been attributed to the attraction of development projects. Those provinces exhibiting a positive net migration include the South, Central, East and Littoral provinces. Those provinces exhibiting a negative net migration include the provinces of the North (Adamaoua, Extreme North), Northwest, West, Southwest.

4.3. ADMINISTRATION

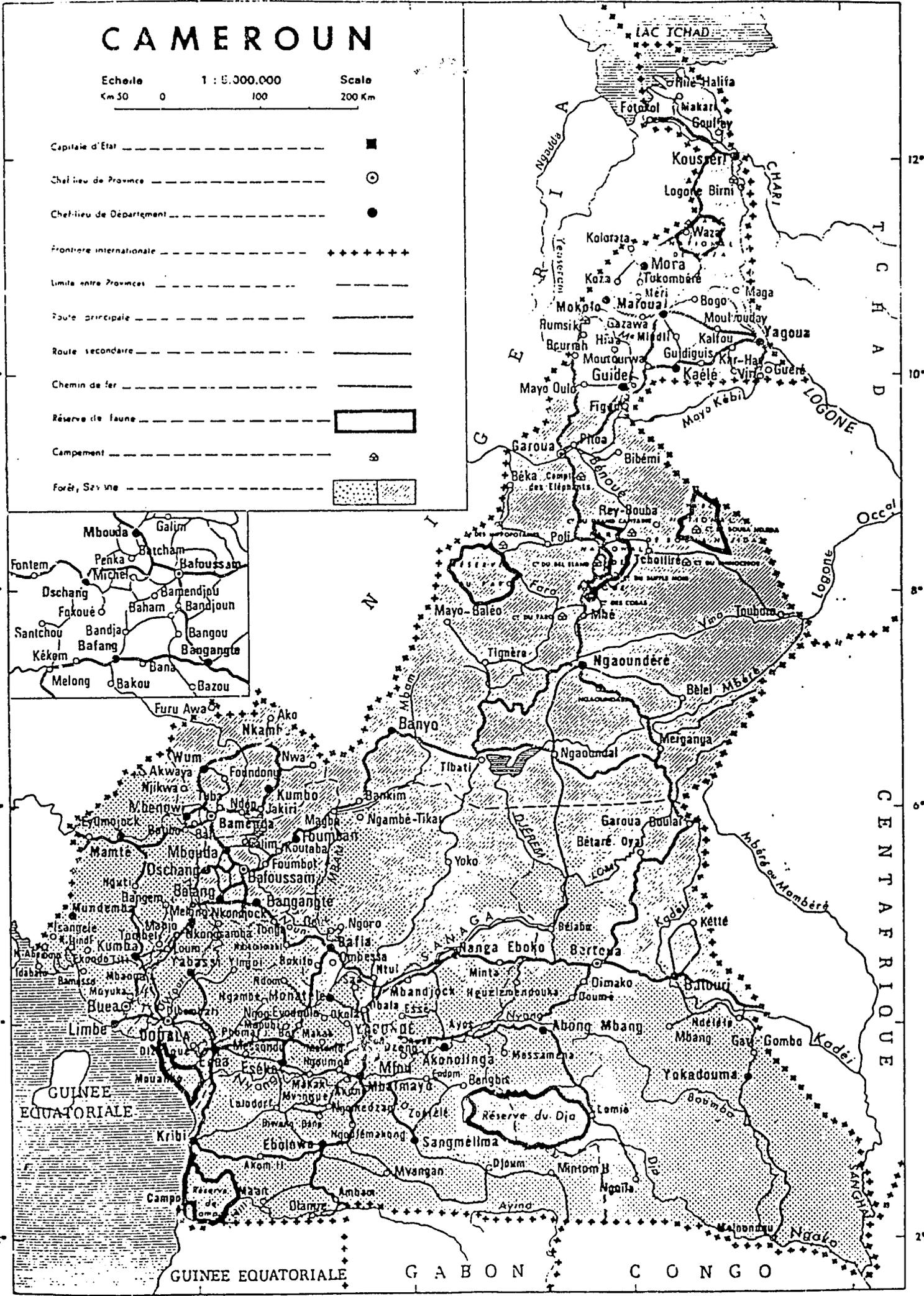
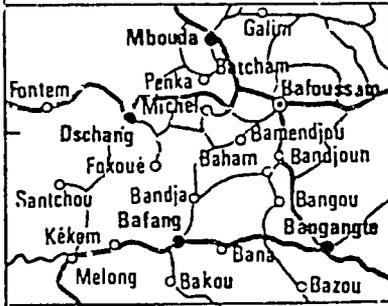
The United Republic of Cameroon is administratively divided into 10 provinces which in turn are divided into 49 divisions (departments). Divisions are further subdivided into districts. The major cities, geographic boundaries of provinces and divisions, areas (km²) and estimated 1985 populations are given (Figures 4.1, 4.2, 4.3 and Table 4.1).

Executive powers are conferred on an elected president, who is head of the federal government and chief of the armed forces. Each province has an appointed governor, and each division an appointed prefect. Management of the economy and development of the country is elaborated by the government in five-year guidelines or "national plans." These documents are designed to direct capital expenditure and administrative effort toward well-defined goals. The most recent (fifth) National Plan spanned the period 1981 to 1986. The sixth five-year plan, 1987 through 1992, was recently accepted as law by the Cameroonian legislature. Unfortunately no copies of this plan were available for my review during the consultancy.

CAMEROUN

Echelle 1 : 5.000.000 Scale
Km 50 0 100 200 Km

- Capitale d'Etat
- Chef-lieu de Province
- Chef-lieu de Département
- Frontière internationale
- Limite entre Provinces
- Route principale
- Route secondaire
- Chemin de fer
- Réserve de faune
- Campement
- Forêt, Savane



CENTRAFRIQUE

10°

12°

12°

CAMEROUN

ECHELLE 1/5 000 000



PROVINCES

LAC TCHAD

12°

12°

EXTREME
NORTH

TCHAD

10°

10°

NORTH

NIGERIA

8°

8°

ADAMAOUA

NORTH
WEST

6°

CENTRAFRIQUE

SOUTH
WEST

WEST

6°

6°

CENTRAL

EAST

4°

4°

OCEAN

GUINEE
EQUATORIALE

LITTORAL

ATLANTIQUE

SOUTH

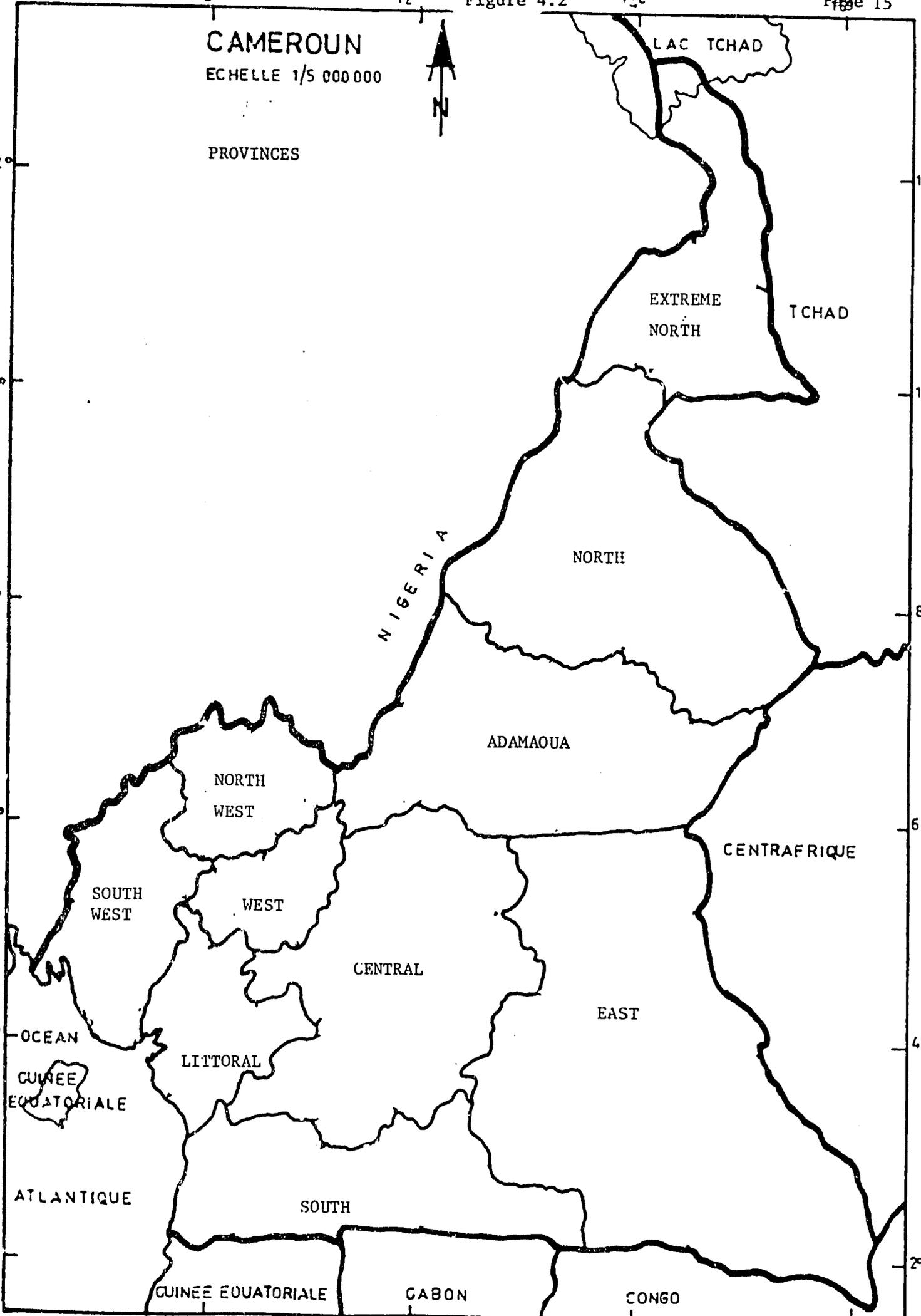
2°

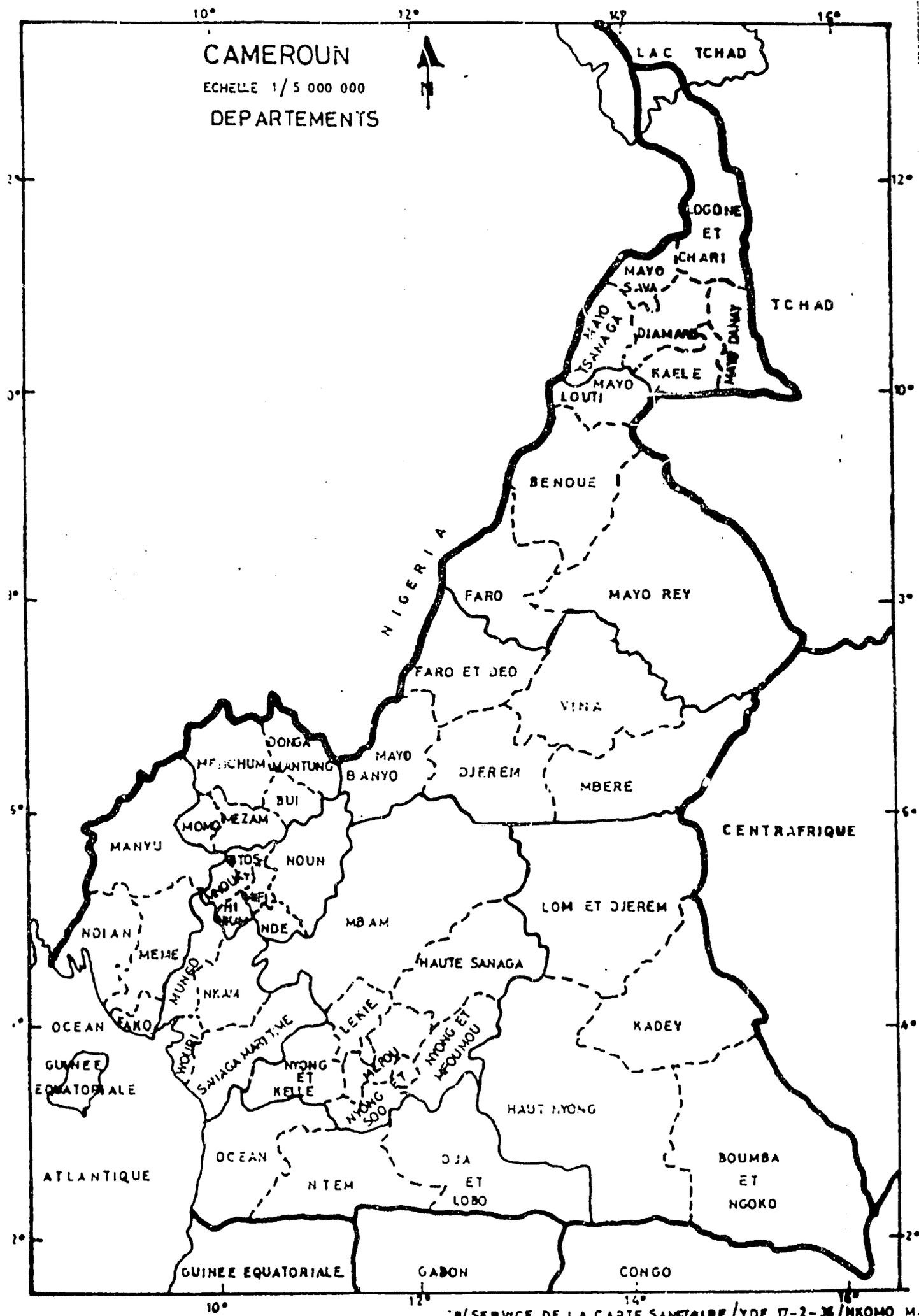
2°

GUINEE EQUATORIALE

GABON

CONGO





Cameroon: Area and Estimated Population*(1985)
of Provinces and Divisions

CAMEROON		Area (km ²)	Estimated Population
		457,600	10,378,819
EXTREME NORTH		26,200	1,667,631
1.	Diamare	4,600	360,570
2.	Kaele	5,000	239,907
3.	Longone et Chari	4,200	187,351
4.	Mayo Danay	5,300	287,342
5.	Mayo Sava	2,700	204,970
6.	Mayo Tsanaga	4,400	389,491
NORTH		67,800	953,645
7.	Benoue	13,600	587,959
8.	Faro	13,500	66,976
9.	Mayou Louti	4,200	212,098
10.	Mayo Ray	36,500	86,612
ADAMAOUA		62,000	411,887
11.	Djerem	13,300	41,092
12.	Faro et Deo	10,400	38,110
13.	Mayo Banyo	8,500	87,610
14.	Mbere	14,300	114,252
15.	Vina	15,500	130,823
WEST		14,000	1,324,223
16.	Bamboutos	1,200	212,017
17.	Haut Nkam	1,000	142,329
18.	Menoua	1,400	274,243
19.	Mifi	1,200	331,632
20.	Nde	1,500	93,654
21.	Noun	7,700	270,348

*Population Estimates based on population and rate of growth in 1976 National Census.

Cameroon: Area and Estimated Population (1985)
of Provinces and Divisions

		Area (km ²) 25,000	Estimated Population 769,012
SOUTHWEST			
22.	Fako	2,100	208,035
23.	Manyu/Fontem	10,200	201,747
24.	Meme	6,500	260,896
25.	Ndian	6,200	98,334
LITTORAL		20,200	1,518,108
26.	Moungo	3,700	425,075
27.	Nkam	6,300	52,840
28.	Sanaga-Maritime	9,300	170,894
29.	Wouri	900	869,299
CENTER		69,000	1,693,944
30.	Haute Sanaga	11,900	78,135
31.	Lekie	2,900	282,301
32.	Mbam	33,000	229,284
33.	Mefou	4,700	171,732
34.	Mefoundi	300	604,606
35.	Nyong et Kelle	6,400	118,492
36.	Nyong et Mfoumou	6,200	101,016
37.	Nyong et Soo	3,600	108,378
SOUTH		47,200	410,536
38.	Dja et Lobo	19,900	138,559
39.	Ntem	16,000	178,062
40.	Ocean	11,300	93,915

TABLE 4.1 (cont.)

Cameroon: Area and Estimated Population (1985)
of Provinces and Divisions

		Area (km ²)	Estimated Population
EAST		108,800	479,649
41.	Boumba et Ngoko	30,600	75,154
42.	Haute Nyong	36,000	161,541
43.	Kadey	15,900	124,200
44.	Lom et Djerem	26,300	118,754
NORTHWEST		17,400	1,150,184
45.	Bui	2,300	178,889
46.	Donga-Mantung	4,300	216,845
47.	Menchum	6,100	230,272
48.	Mezam	2,900	375,074
49.	Momo	1,800	149,104

5. GOVERNMENT INSTITUTIONS RELEVANT TO A POA

This section offers a brief review of the organization of services, particularly as they relate to the activities of programs which could be involved with a POA for GWD.

5.1. AN OVERVIEW OF THE HEALTH CARE DELIVERY SYSTEM

The MOH is headed by the Minister of Public Health, who is appointed by the President. The Minister receives advice and input from the Secretary of State for Health, who is responsible for the coordination of services. Other important consultants include two technical advisors and representatives of the World Health Organization (WHO) and OCEAC.

The central administration of the MOH is based in the capital city of Yaounde. The organizational structure encompasses four directorates: (1) the Division of Public Health, which is responsible for administration of curative medical services offered in urban and rural hospitals and dispensaries; (2) the Division of Preventive Medicine and Public Hygiene, which is responsible for surveillance, environmental health, immunization programs and control of communicable disease and epidemics; (3) the Division of General Administration, which manages the budget of the MOH and is responsible for procurement of materials and provision of transportation; and (4) the Division of Studies, Planning and Health Statistics, which is responsible for short- and long-range health planning, programming and evaluation.

Most of the MOH personnel are located outside of central administration in Yaounde in provincial, divisional, and district administrative and health care delivery services. The provincial delegates of health, of which there are 10, are housed in the cities which are the capitals of the various provinces.* The delegate has the overall responsibility for provision and supervision of curative and preventive service in the province. Each provincial headquarters maintains a statistical unit which receives information from the various divisions. At the divisional level, there are physicians, nurses and ancillary personnel with responsibilities divided along curative (Division of Public Health) and preventive (Division of Preventive Medicine and Public Hygiene) medical disciplines.

5.2. THE DIVISION OF PREVENTIVE MEDICINE AND PUBLIC HYGIENE

The Division of Preventive Medicine and Public Hygiene (DPMPH) is charged with the control of transmissible diseases, epidemiologic surveillance, and the development of specialized services for prevention and prophylaxis of disease. This Division will be considered in detail, since it should be the focal point of the administration, implementation and evaluation of the POA.

The position of the DPMPH, and the importance of preventive medicine, is stressed in the 5th National Plan (pages 261-266). Important themes in this document include the integration of preventive health services with other fundamental government services, health education programs aimed at developing a national health consciousness ("Preventive medicine needs to be present in more places: villages, water sources, schools, fields, roads, offices, etc."), and the relative de-emphasis of curative medical services. DPMPH programs include: (1) the development of national, provincial, and divisional

committees for primary health; (2) the formation of village health worker programs; (3) the creation health education units at the provincial and divisional levels; and (4) the expanded program for childhood immunization (EPI), among others. Surveillance and control efforts are directed at

leprosy, tuberculosis, cholera, schistosomiasis, trypanosomiasis, malaria, diarrheal disease, venereal disease, and onchocerciasis. The 5th National Plan states the need for epidemiological research and health operations for illnesses (especially schistosomiasis) related to dams, methods of vector control, simple but precise techniques for estimating tropical disease morbidity and mortality rates, determination of the impact of diseases on economic development, and the publication of didactic manuals in common language for medical and paramedical personnel.

The DPMPH has a budget of 19 billion CFA (54 million dollars), which constitutes approximately 27% of the total budget of the MOH. There are sources of funding designated for the control of communicable disease which might be utilized for the initial surveillance and control activities proposed in the POA. The latest figures available indicate that 1,825 individuals are employed by this service, including 42 physicians (Preventive Medical Officers, PMO), 10 health technicians, and 137 registered nurses (Annual Report of Activities, Mafiamba, 1982).

The central administrative responsibilities of DPMPH in Yaounde are executed by six services: (1) the Epidemiology and Malaria Service; (2) the Public Health and Sanitation Service; (3) the Health Education Service; (4) the Mental Health Service; (5) the Nutrition Service; and (6) the Laboratory Service. Activities related to better understanding of the epidemiology of GWD in the URC have been the responsibility of the Epidemiology and Malaria Service of the DPMPH. The program for the surveillance and control of dracunculiasis outlined by this service for 1985-86 has the following objectives: (1) to update knowledge of the distribution and prevalence of dracunculiasis in the URC; (2) to evaluate the control efforts in the Mayo Sava division, Extreme North Province; (3) to estimate the potential reduction of dracunculiasis prevalence as a result of water and housing development projects; and (4) to create a file on worldwide activities aimed at dracunculiasis control and eradication.

The DPMPH has personnel in 44 of the 49 provinces (89.8%). Ten to twenty health outposts are staffed in each of the 49 divisions. Through this system of outposts, the PMOs are responsible for the implementation of control programs and specialized surveys based on directives from central and provincial authorities. Most divisions have a statistical department which reports monthly the numbers of reportable diseases seen at government health outposts, dispensaries and hospitals. These are then forwarded to provincial and central MOH and OCEAC authorities (Section 6.4).

One of the principal constraints on the DPMPH is the difficulty in sending mobile teams to the rural areas for health promotion, information collection, and information diffusion. According to the annual report of the

*These include Bamenda, of the Northwest; Buea, of the Southwst; Bafoussam, of the West; Douala of the Littoral; Yaounde, of the Central; Sangmelima, of the South; Bertoua, of the East; Ngaoundere, of Adamaoua; Garoua, of the North and Maroua of the Extreme North.

activities of the DPMPH in 1982, collection of statistical data is hampered by: (1) communication difficulties, (2) inadequate logistical support, and (3) lack of reporting of certain requested information.

5.3. AGENCIES RESPONSIBLE FOR WATER SUPPLY

There is a diffusion of responsibility for water projects throughout the various ministries of the government, and no single administrative structure provides a direct means for new policy development (such as providing protected rural water supplies to villages endemic for GWD) which will impact the entire water sector. In addition to governmental water projects and activities, foreign governmental and non-governmental donor organizations are also actively involved in water supply operations. Many government contracts are awarded to expatriate firms.

The Ministry of Mines and Power, through the Division of Energy and Water, is responsible for overseeing all urban and rural water schemes. However, no documents were available at that ministry which could provide a precise regional overview of completed or planned governmental and non-governmental water schemes.

- 5.3.1. The URC and the IWSSD: The administration recognizes that Cameroon, as a member of the United Nations, the World Health Organization, and related bodies, is bound to the goals of the IWSSD. However, realistically, the government does not have the human, financial, and technological means to realize the ambitious goals of the Decade. A reasonable expectation for 1990 is the attainment of a 50% satisfaction in water, and 5% in sewage disposal. Most funding is directed toward urban water supply.
- 5.3.2. Urban Water Supply: The Ministry of Mines and Power is responsible for the supply of potable water in urban areas. Provision of piped water falls under the scope of the National Water Corporation (French acronym SNEC). In order to insure the continued financing and functioning of the company, the urban population pays for its water supply. However, the cost of delivery of urban water to the consumer is high and must be subsidized by the government. Priority for water supply in urban areas is ordered as follows: (1) cities which are provincial headquarters, (2) cities which are divisional headquarters, (3) cities at the district level, and (4) industry.
- 5.3.3. Rural Water Supply: It is estimated that approximately 4,800 rural water points exist which provide a 35% coverage of the rural population. The need for new water points in rural areas is on the order of 8,200 to 10,200. The Ministry of Agriculture (MOA) is most active in supplying water to the rural areas of the URC. One of the objectives of the MOA is improvement in the conditions of rural life through investments in community development, health education and improvement of water.

Funding for most governmental drilling operations is furnished by the MOA's Fonds National de Developpement Rural (FONADER). FONADER functions as a bank by providing loans and grants to finance water operations. Specific funds are allocated to FONADER for this purpose by the government of the URC and international financial organizations.

Another important source of funding for wells is the MOA's Programme d'Urgence. This program was developed in 1983 in response to a crisis in water supply in the Northern provinces (Adamaoua, North, and Extreme North) due to drought.

Villages selected for new water sources are surveyed by hydrologists (often from expatriate firms such as Arlab and Scanwater) to determine if ground water sources can be tapped. If so, the well is provided by one of several drilling operations, which vary from one area to another. They may be provided by governmental agencies: the Ministry of Plan and Territorial Development, the Hygiene and Sanitation Service (MOH), the Special Fund for Rural Action (FSAR-MOA), and Rural Engineering Services (Genie Rural-MOA). Alternatively, they may come from non-governmental agencies (NGOs), such as: CARE, Save the Children, Eighth Water Supply Project (GTZ), Belgian Cooperation Agency, UNICEF, the World Bank, and various missionary groups.

The most important point for operational input of a GWD POA is the Community Development Service (CDS) of the MOA. This service is usually involved in the selection of villages to receive new water supplies. It is crucial to collaborate with local CDS officials in targeting endemic villages for safe water supplies.

- 5.3.4. The National Water Committee: The National Water Committee (NWC) is the third most significant governmental organization for the POA, following the DPMPH and the MOA. Although still in its developmental stages, this committee provides a mechanism for infusing a new governmental policy on water through the relevant infrastructures and organizations.

The NWC was formed by a recent presidential decree (No. 85/758, May 30, 1985--Annex 3). In addition to DPMPH and Community Development Service, government activities represented on the committee include: energy and water; mines and geology; program; territorial management; hydrological research; rural engineering; meteorology; territorial administration; and breeding, fishing and industrial animals. (A listing of the names of the officials from the NWC is provided in Annex 3).

The objectives of the committee are to: (1) develop a national plan for the utilization of water resources; (2) advise on the establishment of projects, legislature and regulations relative to water politics, particularly the creation of a code of water use; (3) become involved with the conservation, protection and inventory of water resources and sanitation facilities; (4) address the taxation of water; and (5) address any other problem relative to water which should be regulated by the government. Funding necessary for the function of the committee or any specialized activities recommended by the committee is placed under the budget of the Ministry of Mines and Energy (MME). Likewise, the MME provides the president and secretary of the committee. Two of the initial priorities of the NWC (based on a review of the minutes of the first meeting) include: (1) drafting a master plan for water distribution to town and villages, including an inventory of the water activities in the country, and (2) development of a comprehensive work agenda.

I interviewed Mr. J.B. Agborsangaya, the secretary of the committee. He expressed interest in ideas for new initiatives in policy development which have broad interest and span the various ministries represented on the committee. Health, rural water supply, the IWSSD and the international GWD initiative are issues which, he noted, could provide an avenue for the development of the committee's program.

6. DRACUNCULIASIS IN CAMEROON

6.1. A REVIEW OF PUBLISHED LITERATURE

Two articles on guinea worm disease in the URC have been published, both of which concern the focus in the Manderu Mountains of Mayo Sava. The most important is an article published in 1979 by H. Issoufa et al. (1979). This excellent study was completed in October 1975, in Podokwo Center (population (1970) 3,853) in the Manderu Mountains. The area of the study is shown in the box (Figure 6.1). In a survey of 944 persons, the authors found that 251 (26.6%) had lesions of GWD. By history, 46.3% of the inhabitants claimed to have had the infection the previous year and 75.7% claimed to have been infected at least once in their lives. The 251 cases reported by Issoufa et al. are the only case reports of guinea worm from Cameroon that exist in the world literature (A.H. Abdou, 1985).

The clinical findings among patients in the Issoufa series were typical. There was no difference in attack rates in males and females, and children were rarely afflicted. Most (92.8%) lesions or emerging worms were found on the lower extremities (foot, calf, knee and thigh). The average worm burden per infected individual was 1.6. The duration of immobilization due to the GWD is presented below (Table 6.1).

TABLE 6.1
Duration of Immobilization due to Guinea Worm Infection
(as reported by Issoufa et al., 1979)

Duration of illness	Number of patients (%)
0-2 weeks	122 (65.6)
2-4 weeks	30 (16.1)
4-6 weeks	16 (8.6)
6-8 weeks	7 (3.8)
8-10 weeks	2 (1.1)
10-12 weeks	9 (4.8)

Seasonal variations in infection rates were demonstrated by reviewing patient records kept by a missionary health center at Godigong, located near the area of the study. The greatest number of cases were seen at this clinic during the summer and fall months, corresponding with peak rainfall in the region.

FIGURE 6.2
Variation of diagnosis rates for dracunculiasis at the Health Center in Godigong (from Issoufa et al., 1979)

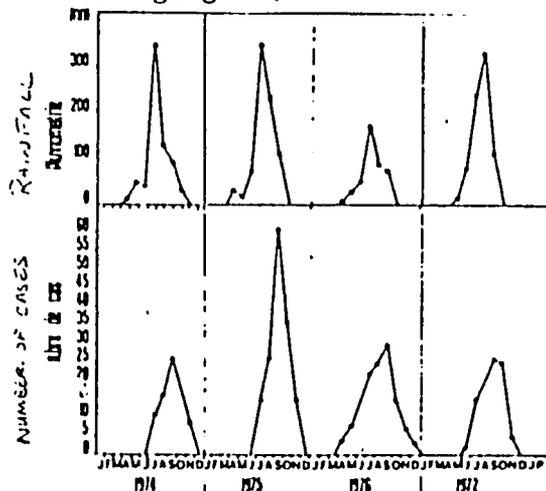
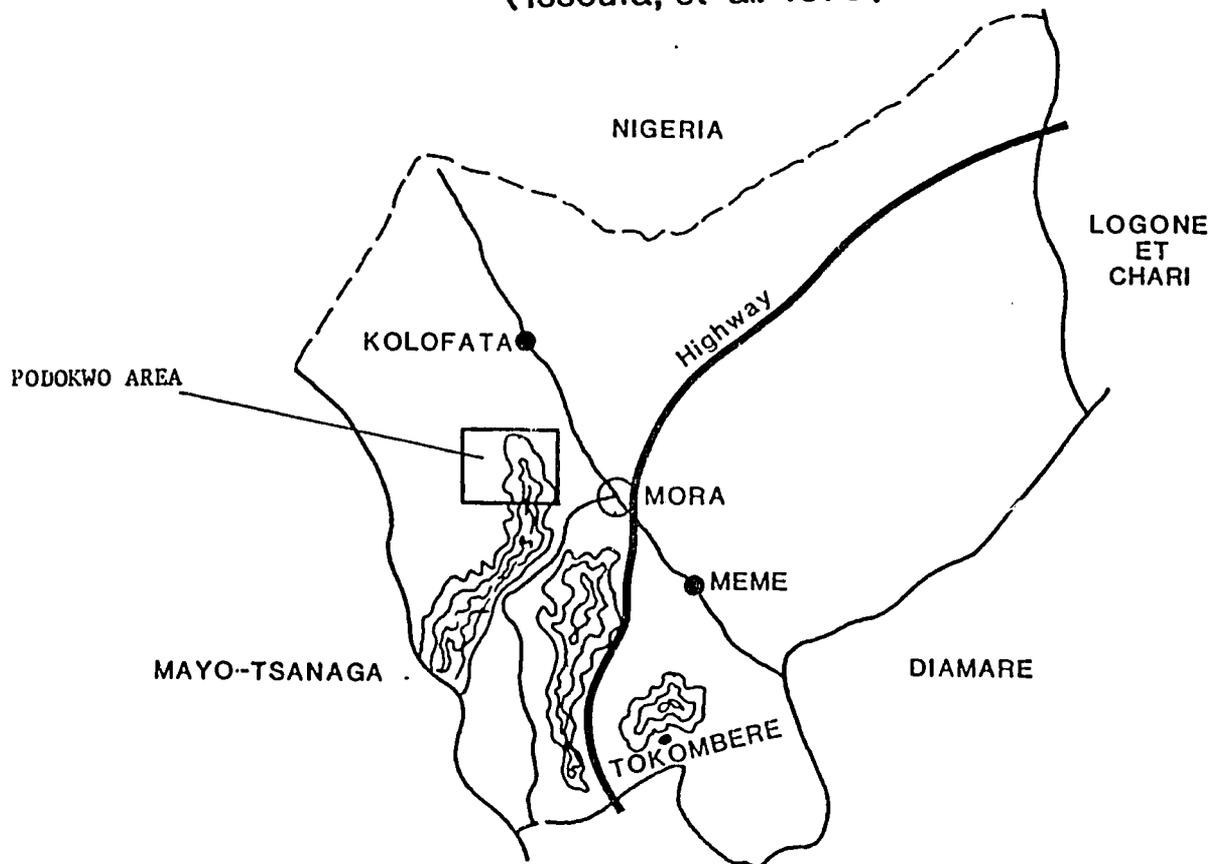


FIGURE 6.1

PODOKWO DRACUNCULIASIS SURVEY, MAYO SAVA
(Issoufa, et al. 1979)



In a paper published by C. Ripert (a coauthor on the Issoufa study) (1979), dracunculiasis is briefly mentioned; the content essentially summarizes the Issoufa report.

An unpublished but important work on GWD in the URC is the thesis for the degree of Doctor of Medicine by Dr. Brigitte Roche (University of Bordeaux II, 1984). This study, completed under the supervision of Professor Ripert, provides a detailed map of the traditional wells in the Mayo Sava focus, many of which are transmission sites in the mountain communities. The thesis also outlines the efforts by University of Bordeaux personnel to control dracunculiasis through application of temephos (ABATE™) to all of the suspected traditional wells (See section 7.2). The dissertation did not undertake epidemiological studies and so does not add to the available knowledge about the numbers and distribution of cases which occur in that area.

These few reports, which form the entire body of literature on dracunculiasis in the URC, were all based on the focus in Mayo Sava. However, this literature does not imply that GWD is limited to the few studied foci in the division of Mayo Sava. The authors considered the infection to be "well known" over a fairly large geographical area in the North. Issoufa mentions potentially endemic areas near or surrounding Poli, Yagoua, Bogo, and Mokolo. Ripert mentions the infection is found near the town of Koza. These widely dispersed locations are shown (Figure 6.3). Probably as a result of these reports, the general impression evolved that GWD is limited to the Northern regions of the country.

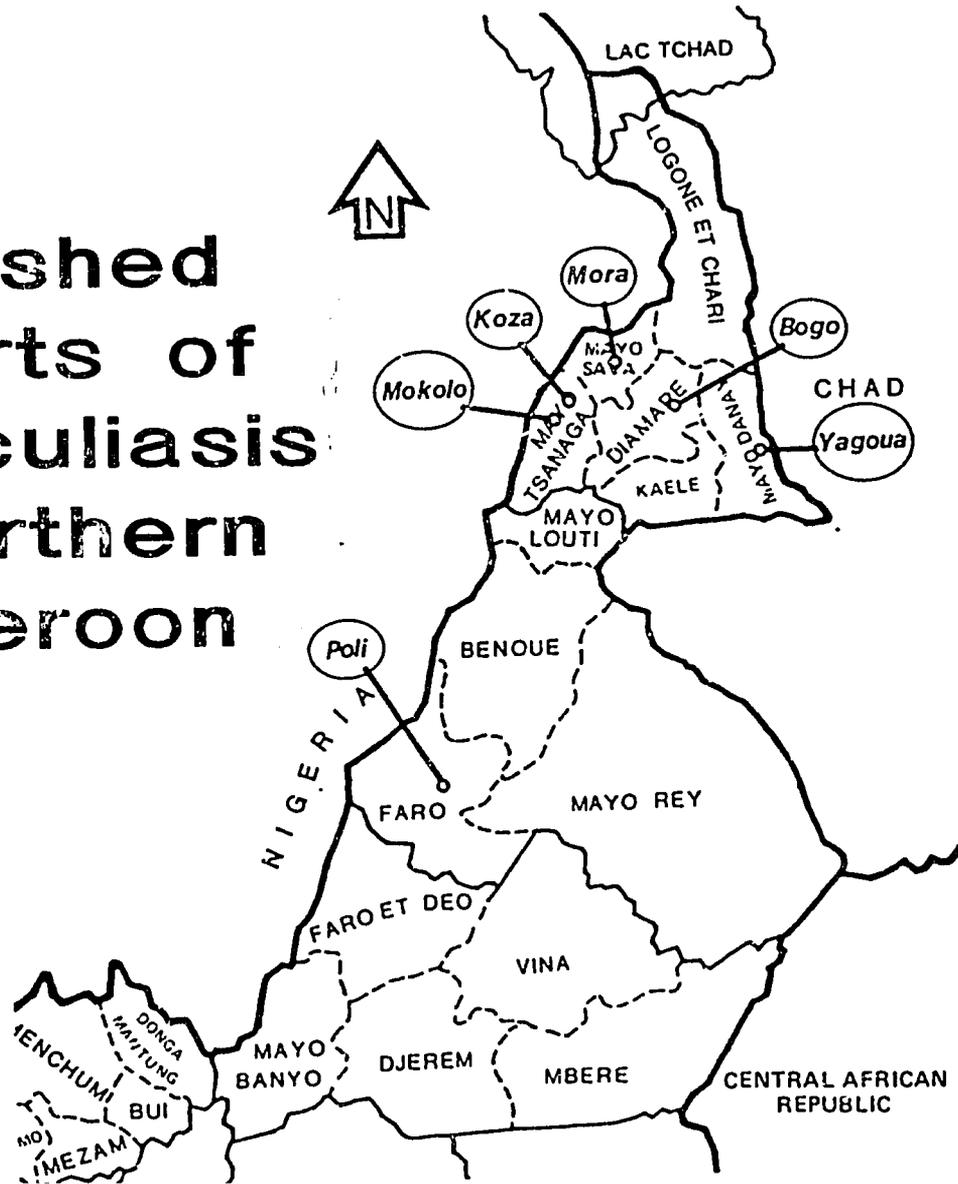
6.2. THE 1984 QUESTIONNAIRE SURVEY

In an attempt by the MOH to further delineate the geographical distribution of GWD in the suspected endemic areas, Dr. Peter-Charles Mafiamba and Dr. Richard Wandji Ngah mailed a questionnaire to health officials in the northern provinces (Extreme North, North, and Adamaoua). Mailings were to the provincial delegates for health, and provincial and divisional PMOs of the DPMPH. The questionnaire was lengthy; it requested information on numbers and origin of cases, as well as water source information (Annex 4). To gather information from other areas of the URC, telegrams were sent to the provincial delegates of health of the other seven provinces. These requested information that might be available on GWD in these regions.

The response rate was poor; two positive and no negative reports were received. The only questionnaire returned was from Mayo Sava. The other response (to a telegram) was from the provincial delegate of the Southwest Province, who reported eight cases of GWD over the three-year period (1979-81) at the hospital of Bota Annex, in the coastal city of Limbe (Victoria), Division of Fako. This focus was later investigated by an epidemiologist from the Epidemiology and Malaria Service in Yaounde (Section 6.5.2).

FIGURE 6.3

Published Reports of Dracunculiasis in Northern Cameroon



6.3. UNPUBLISHED REPORTS OF DRACUNCULIASIS (Anecdotal Reports)

Dr. Kollo Basile, PMO of the Division of Mayo Sava, in a letter to the Minister of Health in July 1984, listed those villages which, to his knowledge, were affected by GWD (Annex 6). Since active case detection efforts in all villages in the Mayo Sava division have not been performed, Dr. Kollo's report should not be considered comprehensive. However, this was the first report that the infection was not confined to the mountains in that area. Affected villages on the plain included Dargala, Meme, Modiaure, Kolofata, Kerawa* and Assigachiga (Figure 6.4).

The heightened awareness among MOH personnel generated some reports of guinea worm cases from other northern divisions (Figure 6.5). The infection was reported from 3 areas in the North Province: near the city of Pitoa (village of Banjuma-Toree) by Dr. Ncharre Chouaibou, PMO, Benoue Division; near the city of Ray Bouba (the village of Toboro) by the assistant Deputy Chief, Tchollire, Mayo Ray Division; and along the border with Nigeria (near the town of Beka), Faro Division (personal communication, Dr. P.C. Mafiamba, Special Advisor to the Minister of Health).

*Kerawa is not noted in Dr. Kollo's report, but was mentioned in a personal communication.

FIGURE 6.4

VILLAGES AFFECTED BY DRACUNCULIASIS IN MAYO SAVA DIVISION CAMEROON.

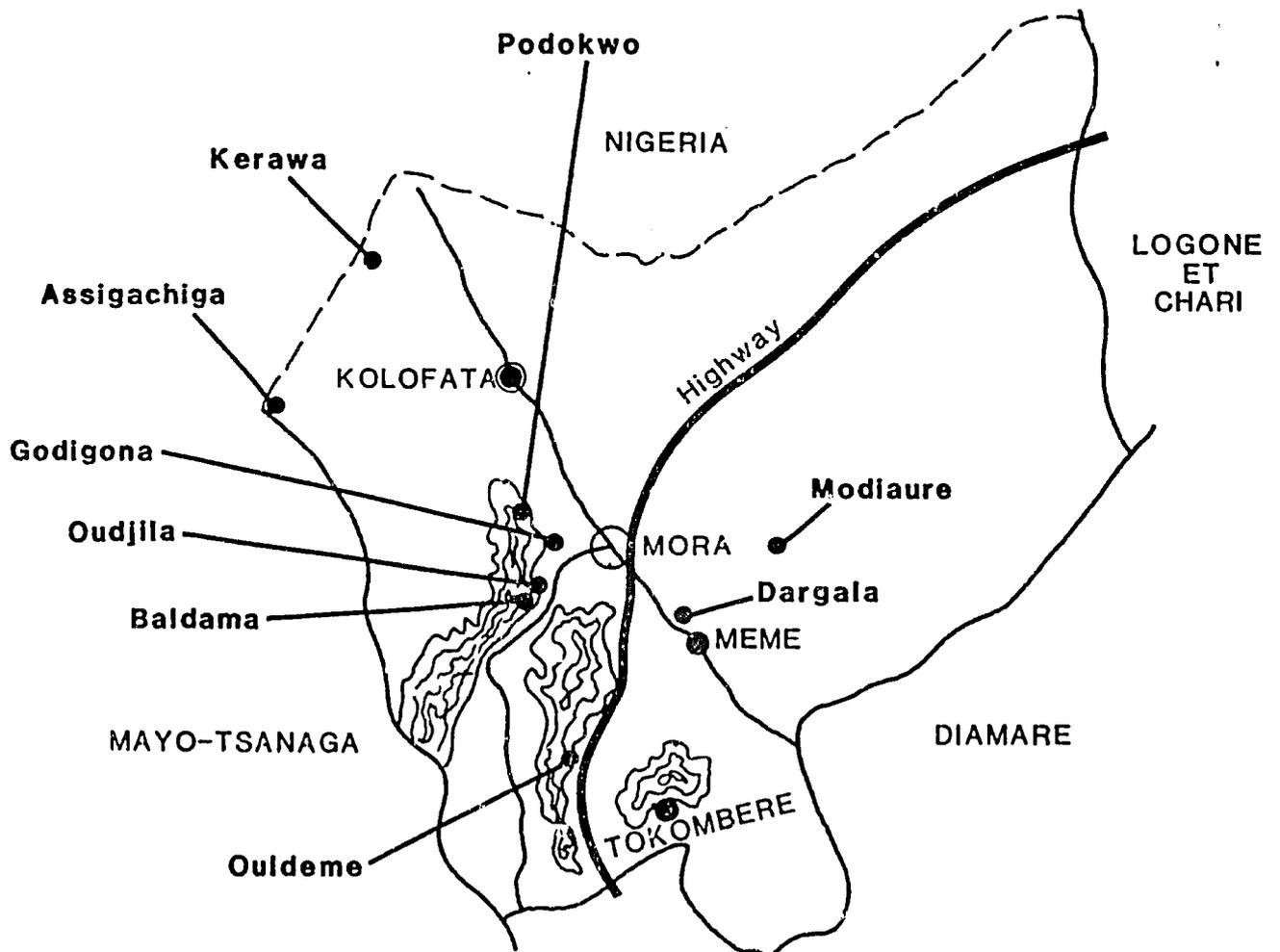
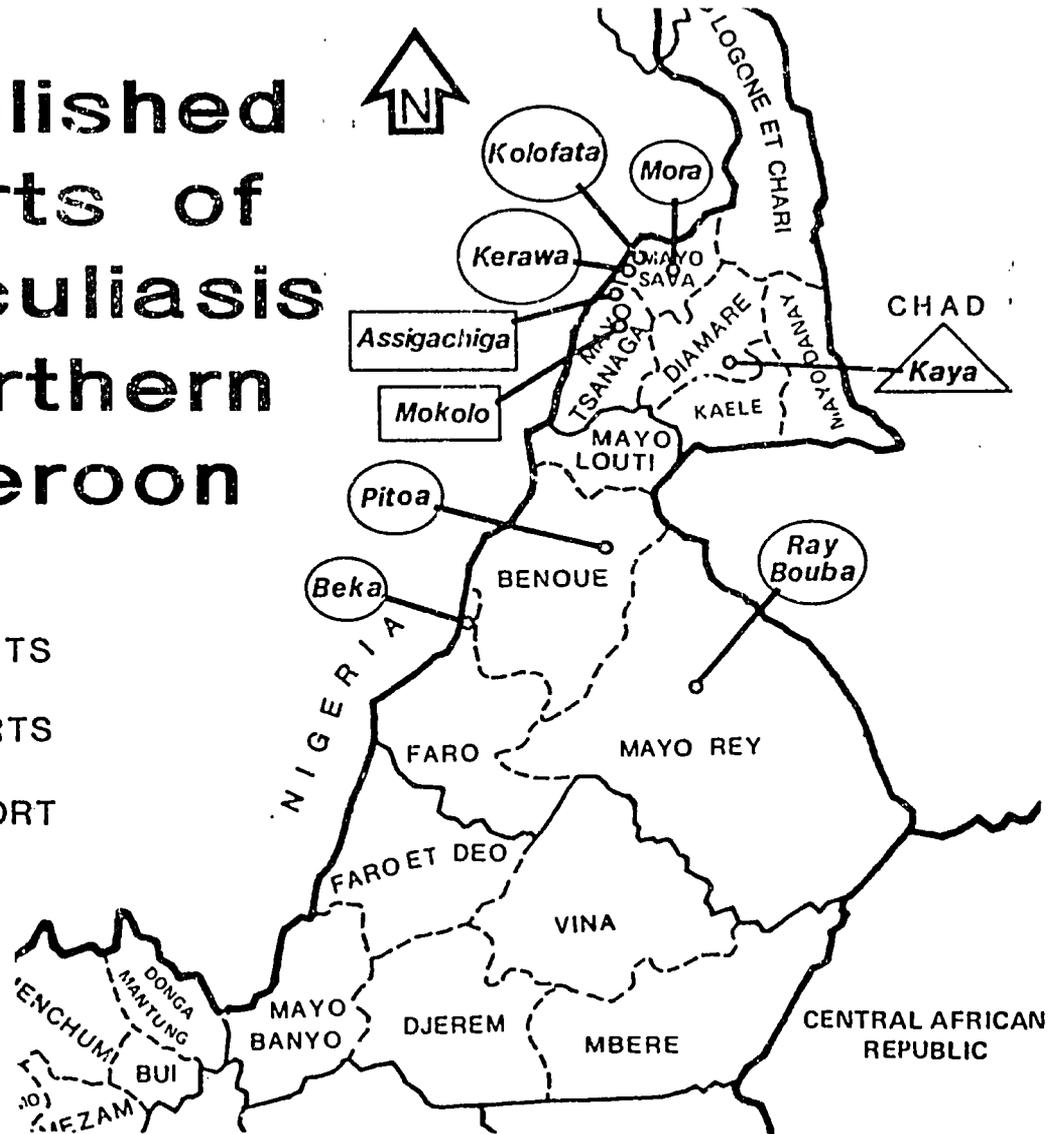


FIGURE 6.5

Unpublished Reports of Dracunculiasis in Northern Cameroon

- MOH REPORTS
- NGO REPORTS
- △ CHIEF REPORT



6.4. PASSIVE CASE REPORTING OF DRACUNCULIASIS

- 6.4.1. Overview of the National Reporting System: The DPMPH passive surveillance case reporting system is based on monthly reporting by health outposts, dispensaries, and government hospitals.** The field reporting units file (with the divisional PMO's office) a detailed "activity" form containing reportable infections and other disease conditions. The activity forms are reviewed by the DPMPH statistical unit, and total figures for the region are recorded on a divisional reporting form.

The complex divisional monthly reporting form (MOH/OCEAC surveillance forms) are 10 pages long and request three kinds of information: numbers of patients seen, prevention activities (e.g., vaccination program activity), and disease reports (Annex 4). The 42 reportable diseases include, among others: cholera, yellow fever, haemorrhagic fever, smallpox, measles, tetanus, meningitis, trypanosomiasis, venereal disease, schistosomiasis, onchocerciasis, trachoma, leprosy, tuberculosis, and dracunculiasis.

The divisional DPMPH statistical department completes these forms in triplicate. One form is sent to the provincial delegate for health in the regional capital city. Another form is sent to OCEAC. The third form is sent to the DPMPH in Yaounde. Therefore, similar data reported through the passive surveillance system is compiled by three separate offices.

- 6.4.2. Dracunculiasis as a Reportable Disease: In 1982, the MOH added dracunculiasis to its list of reportable conditions. Reporting did not commence until the end of 1983, due to the time required to notify the various reporting units of the change and to print and issue new reporting forms. Uneven distribution of revised forms continued to be a problem in 1984. In June 1984, a letter was sent by the Ministry of Health to provincial delegates of health and PMOs reminding them that GWD was now a reportable condition on the MOH/OCEAC surveillance forms.

I reviewed all MOH/OCEAC surveillance forms that had been returned to the Epidemiology and Malaria Service, DPMPHS, Ministry of Health, Yaounde. This information was sent directly to this service from the 49 divisions of the 10 provinces.

The period of review encompassed 1984, 1985, and the first six months of 1986 (30 months). Nine hundred and nine of 1,470 (62%) possible reports were returned to the Yaounde office and were available for review. The response rates were best in 1984 (68%) and worst in 1986 (41%) (Table 6.2). However, arrival of late returns will undoubtedly improve reporting for 1986. For the entire 30-month period (Figure 6.6), the West and the South Provinces had the

**NGOs and missionary groups which provide health care to the population do not report to this system.

- 6.4.3. Review of MOH Records: best rates of reporting (both at 81%), followed by the Northwest (73%). The poorest reporting was from the provinces of the Southwest (30%) and the North (38%). Unfortunately, these are provinces suspected or known to be endemic for dracunculiasis.

Eleven of 49 (22%) of divisions had poor reporting; these were distributed among seven of the ten provinces. Three of these filed no reports: Fako and Ndian (Southwest Province) and Benoue (North Province). These three divisions are of interest since other sources suggest that dracunculiasis may be transmitted in these areas. Eight other divisions filed of fewer than 51% of the possible returns during the 30-month period: Mayo Louti (50%) and Mayo Ray (33%), North Province; Vina (20%), Adamaoua Province; Manyu (33%), Southwest Province; Sanaga Maritime (43%), Littoral Province; Mefoundi (10%), Center Province; Boumba et Ngoko (6%), East Province; and Momo (43%), Northwest Province.

TABLE 6.2

Surveillance Reports Filed with the Epidemiology
and Malaria Service, MOH

		1984-1986		(% =percent possible reports*)	
		1984 (%)	1985 (%)	1986** (%)	Total (%)
CAMEROON		405 (68)	381 (64)	123 (41)	909 (62)
EXTREME NORTH		65 (90)	53 (74)	7 (19)	125 (69)
1.	Diamare	10 (83)	6 (50)	3 (50)	19 (63)
2.	Kaele	12 (100)	2 (17)	0 (0)	14 (46)
3.	Longone et Chari	11 (92)	11 (92)	2 (32)	24 (80)
4.	Mayo Danay	12 (100)	12 (100)	0 (0)	24 (80)
5.	Mayo Sava	12 (100)	11 (92)	2 (32)	25 (83)
6.	Mayo Tsanaga	8 (67)	11 (92)	0 (0)	19 (63)
NORTH		15 (31)	28 (58)	4 (66)	47 (39)
7.	Benoue	0 (0)	0 (0)	0 (0)	0 (0)
8.	Faro	12 (100)	8 (66)	2 (32)	22 (73)
9.	Mayou Louti	3 (25)	11 (91)	1 (16)	15 (50)
10.	Mayo Ray	0 (0)	9 (75)	1 (16)	10 (33)
ADAMAOUA		27 (45)	40 (66)	10 (33)	77 (59)
11.	Djerem	8 (66)	12 (100)	2 (32)	22 (73)
12.	Faro et Deo	11 (91)	2 (16)	2 (32)	15 (50)
13.	Mayo Banyo	8 (66)	9 (75)	3 (50)	20 (66)
14.	Mbere	0 (0)	12 (100)	2 (32)	14 (46)
15.	Vina	0 (0)	5 (41)	1 (16)	6 (20)
WEST		67 (93)	54 (75)	26 (72)	147 (81)
16.	Bamboutos	12 (100)	10 (83)	5 (83)	27 (90)
17.	Haut Nkam	9 (75)	10 (83)	3 (50)	22 (73)
18.	Menoua	12 (100)	10 (83)	4 (66)	26 (86)
19.	Mifi	11 (91)	12 (100)	6 (100)	29 (96)
20.	Nde	12 (100)	6 (50)	4 (66)	22 (73)
21.	Noun	11 (91)	6 (50)	4 (66)	21 (70)

* Response rate

**possible 6 reports for 1986.compared to 12 for other years

TABLE 6.2 (cont.)

. NUMBER AND PERCENT OF SURVEILLANCE REPORTS FILED (cont.)

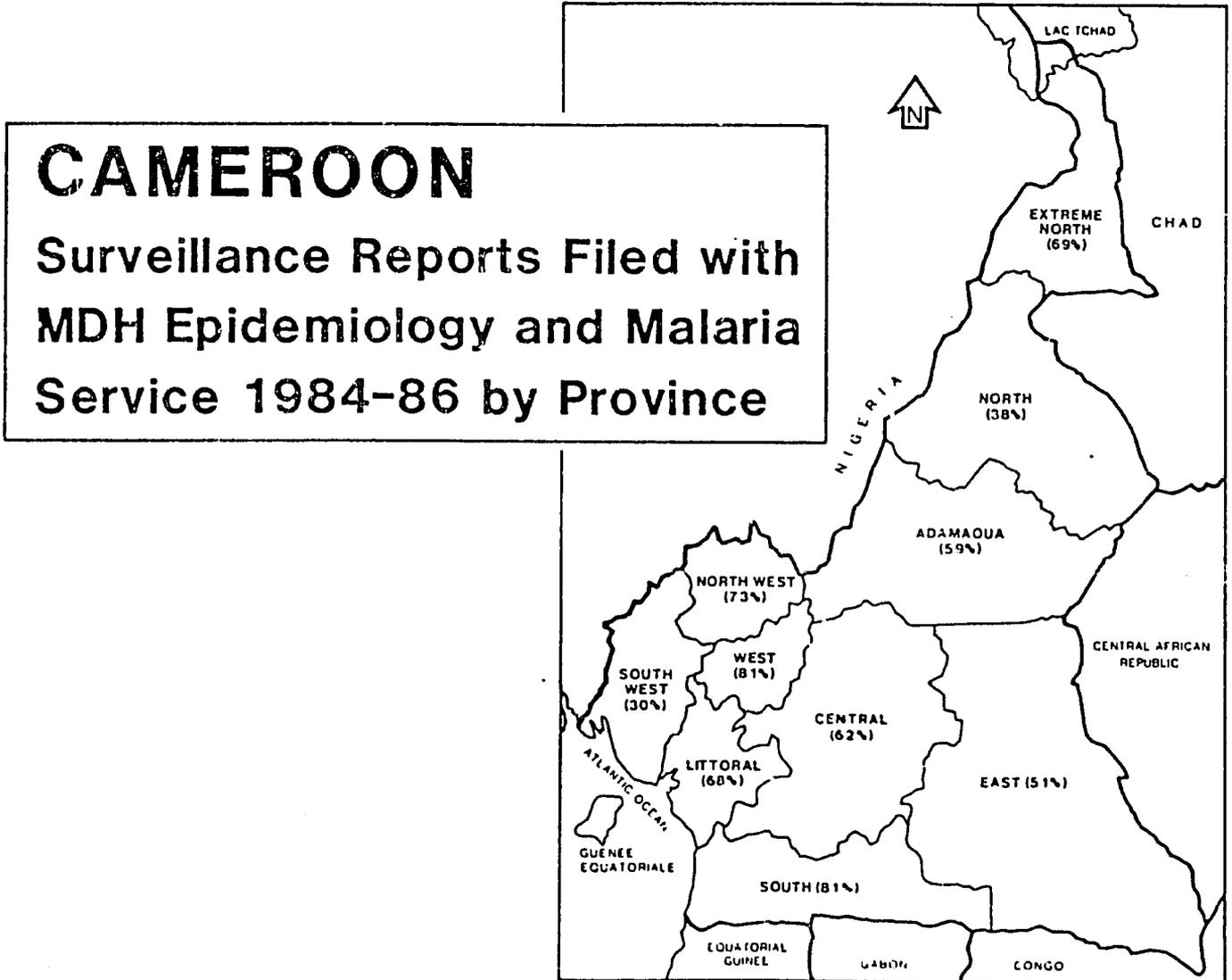
		1984 (%)	1985 (%)	1986 (%)	TOTAL (%)
SOUTHWEST		12 (25)	14 (29)	11 (45)	37 (30)
22.	Fako	0 (0)	0 (0)	0 (0)	0 (0)
23.	Manyu/Fontem	2 (16)	2 (16)	6 (100)	10 (33)
24.	Meme	10 (83)	12 (100)	5 (83)	27 (90)
25.	Ndian	0 (0)	0 (0)	0 (0)	0 (0)
LITTORAL		46 (95)	21 (43)	15 (62)	82 (68)
26.	Moungo	11 (91)	11 (91)	5 (83)	27 (90)
27.	Nkam	11 (91)	0 (0)	5 (83)	16 (53)
28.	Sanaga-Maritime	12 (100)	1 (8)	0 (0)	13 (43)
29.	Wouri	12 (100)	9 (75)	5 (83)	26 (86)
CENTER		66 (68)	68 (70)	15 (31)	149 (62)
30.	Haute Sanaga	10 (83)	9 (75)	3 (50)	22 (73)
31.	Lekie	10 (83)	11 (91)	0 (0)	21 (70)
32.	Mbam	9 (75)	2 (16)	0 (0)	11 (36)
33.	Mefou	5 (41)	11 (91)	0 (0)	16 (53)
34.	Mefoundi	0 (0)	3 (25)	0 (0)	3 (10)
35.	Nyong et Kelle	10 (83)	9 (75)	5 (83)	24 (80)
36.	Nyong et Mfoumou	12 (100)	11 (91)	3 (50)	26 (86)
37.	Nyong et Soo	10 (83)	12 (100)	4 (56)	26 (86)
SOUTH		34 (94)	28 (77)	11 (91)	73 (81)
38.	Dja et Lobo	10 (83)	10 (83)	4 (66)	24 (80)
39.	Ntem	12 (100)	6 (50)	1 (16)	19 (63)
40.	Ocean	12 (100)	12 (100)	6 (100)	30 (100)

TABLE 6.2 (cont.)

NUMBER AND PERCENT OF SURVEILLANCE REPORTS FILED (cont.)

		1984 (%)	1985 (%)	1986 (%)	TOTAL (%)
EAST		20 (41)	32 (66)	10 (41)	62 (51)
41.	Boumba et Ngoko	0 (0)	2 (16)	0 (0)	2 (6)
42.	Haute Nyong	0 (0)	9 (75)	5 (83)	14 (46)
43.	Kadey	11 (91)	10 (83)	3 (50)	24 (80)
44.	Lom et Djerem	9 (75)	11 (91)	2 (32)	22 (73)
NORTHWEST		53 (88)	43 (71)	14 (46)	110 (73)
45.	Bui	8 (66)	11 (91)	6 (100)	25 (83)
46.	Donga-Mantung	11 (91)	12 (100)	5 (83)	28 (93)
47.	Menchum	12 (100)	5 (41)	0 (0)	17 (56)
48.	Mezam	12 (100)	12 (100)	3 (50)	27 (90)
49.	Momo	10 (83)	3 (25)	0 (0)	13 (43)

FIGURE 6.6



Two Hundred and fifty-four cases of dracunculiasis were reported to the DPMPH over the 30-month period (Table 6.3). There were no cases reported in 1984, although this may be related to logistical problems (Section 6.4.2). In 1985, 168 cases were reported, and 86 cases have been reported in 1986. An important feature is the inconsistency of reporting. Only Manyu/Fontem (Southwest Province) reported cases two years in a row (1985 and 1986). All other divisions which reported GWD did so for one year only.

The distribution of reported cases is shown (Figure 6.7).

Dracunculiasis was reported by six districts in four provinces. Sixty-one percent of cases are from the North Province, mostly from the division of Faro (50% of all cases).

SUMMARY TABLE 6.3

OFFICIAL CASE REPORTS OF DRACUNCULIASIS IN CAMEROON: 1984-1986

<u>Division</u>	<u>Province</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>Total (%)</u>
1. Mayo Sava	Extreme North	0	0	1	1 (0.4)
2. Faro	North	0	127	0	127 (50.0)
3. Mayo Ray	North	0	29	0	29 (11.4)
4. Mayo Banyo	Adamaoua	0	3	0	3 (1.2)
5. Mbere	Adamaoua	-	0	55	55 (21.6)
6. Manyu	Southwest	0	9	3	39 (15.4)
Total		0	168	86	254 (100.0)

TABLE 6.3

Cases of Guinea Worm (%) Reported through Passive Case
 Section System to the Epidemiology and Malaria Service, MOH
 1984-1986

	1984	1985	1986	TOTAL	Comments
CAMEROON	0	168 (100)	86 (100)	254 (100)	
EXTREME NORTH	0	0	1 (1)	1 (.3)	
1. Diamare	0	0	0	0	631 cases reported in 1984 by OCEAC
2. Kaele	0	0	-	0	
3. Lo.gone et Chari	0	0	0	0	
4. Mayo Danay	0	0	-	0	756 cases reported in 1984 by OCEAC
5. Mayo Sava	0	0	1 (1)	1 (.4)	
6. Mayo Tsanaga	0	0	-	0	
NORTH	0	156 (92)	0	156 (61)	
7. Benoue	-	-	-	0	
8. Faro	0	127 (75)	0	127 (50)	
9. Mayo Louti	0	0	0	0	
10. Mayo Ray	-	29 (17)	0	29 (11)	
ADAMAOUA	-	3 (1)	55 (63)	58 (23)	
11. Djerem	0	0	0	0	
12. Faro et Deo	0	0	0	0	
13. Mayo Banyo	0	3	0	3 (1.2)	
14. Mbere	0	0	55 (63)	55 (21.6)	
15. Vina	-	0	0	0	
WEST	0	0	0	0	
16. Bamboutos	0	0	0	0	
17. Haut Nkam	0	0	0	0	40 cases reported in 1984 by OCEAC
18. Menoua	0	0	0	0	
19. Mifi	0	0	0	0	
20. Nde	0	0	0	0	
21. Noun	0	0	0	0	

Cases of Guinea Worm (%) Reported through Passive Case
 Detection System to the Epidemiology and Malaria Service, MOH
 1984-1986

		1984	1985	1986	TOTAL	Comments
SOUTHWEST		0	9 (5)	30 (34)	39 (15.2)	
22.	Fako	-	-	-	-	8 cases reported by a local physician
23.	Manyu/Fontem	0	9 (5)	30 (34)	39 (15.2)	25 cases reported by OCEAC in 1984
24.	Meme	0	0	0	0	
25.	Ndian	-	-	-	-	
LITTORAL		0	0	0	0	
26.	Moungo	0	0	0	0	
27.	Nkam	0	-	0	0	
28.	Sanaga-Maritime	0	0	-	0	
29.	Wouri	0	0	0	0	
CENTER		0	0	0	0	
30.	Haute Sanaga	0	0	-	0	
31.	Lekie	0	0	-	0	
32.	Mbam	0	0	-	0	
33.	Mefou	0	0	-	0	
34.	Mefoundi	-	0	-	0	
35.	Nyong et Kelle	0	0	0	0	87 cases reported by OCEAC in 1984
36.	Nyong et Mfoumou	0	0	0	0	
37.	Nyong et Soo	0	0	0	0	
SOUTH		0	0	0	0	
38.	Dja et Lobo	0	0	0	0	8 cases reported by OCEAC in 1984
39.	Ntem	0	0	0	0	
40.	Ocean	0	0	0	0	169 cases from Kribi Investigated - error

TABLE 6.3 (cont.)

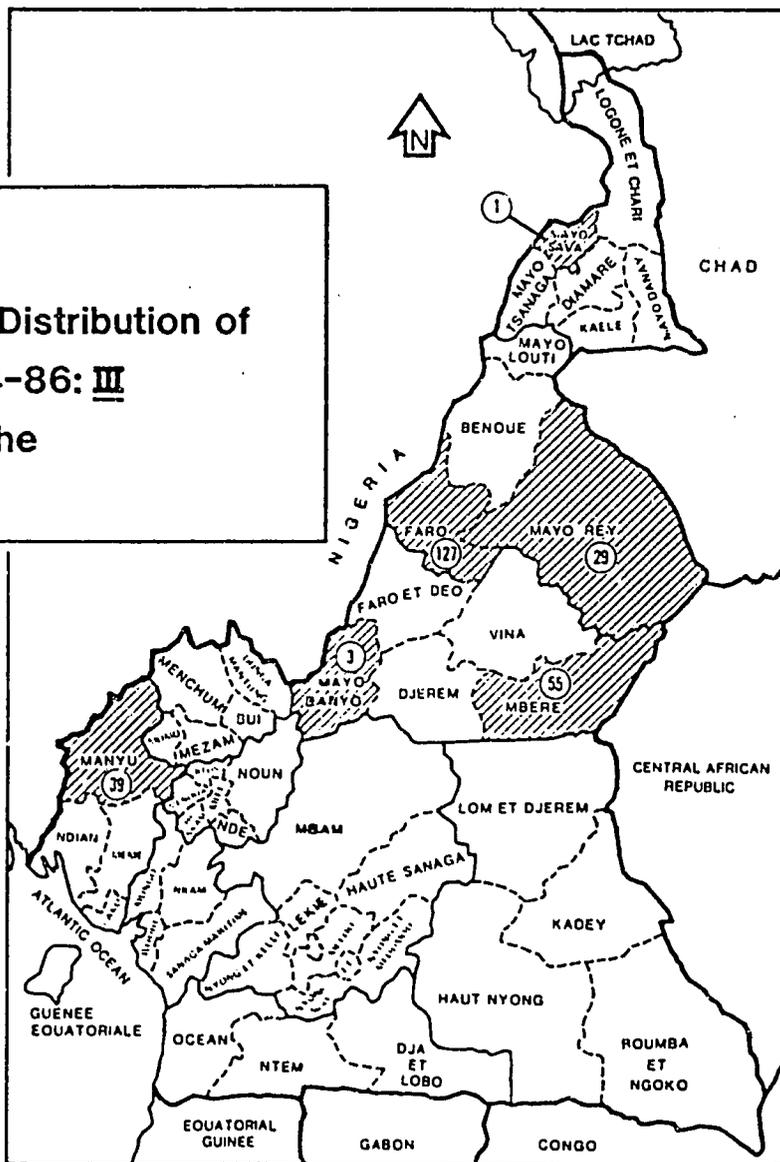
Cases of Guinea Worm (%) Reported through Passive Case
etection System to the Epidemiology and Malaria Service, MC
1984-1986

		1984	1985	1986	Total	Comments
EAST		0	0	0	0	
41.	Boumba et Ngoko	-	0	-	0	
42.	Haute Nyong	-	0	0	0	
43.	Kadey	0	0	0	0	
44.	Lom et Djerem	0	0	0	0	100 cases reported by OCEAC 1984
NORTHWEST			0	0	0	
45.	Bui	0	0	0	0	
46.	Donga-Mantung	0	0	0	0	
47.	Menchum	0	0	-	0	
48.	Mezam	0	0	0	0	
49.	Meme	0	0	0	0	

FIGURE 6.7

CAMEROON
DRACUNCULIASIS: Geographical Distribution of
Official Surveillance Reports 1984-86: III
Situation Reported at the end of the
Consultancy in August 1986

n = 254



- 6.4.4. OCEAC Records: Computerized information on reports of guinea worm at OCEAC was available for 1984. The OCEAC file showed 1,647 cases reported by six provinces. These differed greatly from the reports sent to the MOH for other years; three provinces (West, Central, and East) have never filed case reports to the MOH. A summary of the discrepancies between the MOH and OCEAC reports for 1984 is given (Table 6.4).

I have concluded that most, if not all, of these reports, are faulty for several reasons. First, all 1387 cases (84% of total OCEAC cases) reported from the Extreme North Province (Diamare and Mayo Danay Divisions) were in the age group of one to four years. This age group is rarely, if ever, infected by GW. Second, the health authorities whom I visited at the DPMPH divisional headquarters in Diamare and Mayo Danay were unaware of any GWD cases in 1984-86, and were surprised to hear the OCEAC figures. Third, there was excellent report filing with central authorities by these two divisions for the 1984 year (Diamare-83%, Mayo Danay-100%), yet no GW cases were reported. Finally, I also undertook a site visit to determine the validity of 87 OCEAC case reports from the division of Nyong et Kelle, Central Province. Review of provincial records and interviews with the provincial PMO provided no substance to the OCEAC report.

Discussions with the Chief of Statistics, OCEAC, confirmed that the only sources of data for OCEAC computer files were the MOH/OCEAC surveillance forms; no additional source of reporting was used to enhance their surveillance system. Time did not allow individual review of the report forms* upon which the OCEAC computer file was based. I have chosen not to use any of the OCEAC case reports in final tabulations of dracunculiasis in the URC.

*The cause for the errors in the OCEAC computer file is unclear. A likely source is keypunch error. All surveillance forms which are received are recopied by hand to computer coded data sheets, and then are keypunched into a microcomputer. There is a large backlog, and keypunchers were entering March 1985 data when I visited.

TABLE 6.4

OCEAC COMPUTER FILE REPORTS
 COMPARED WITH MOH SURVEILLANCE RECORDS
 1984

Province/ Division	OCEAC				MOH		Conclusion	
	1984 case reports	<1	1-4	5-14	>15	1984 case reports		% of mos reported
		AGE-GROUP (years)						
Extreme North								
Diamare	631	0	631	0	0	0	83%	Site visit confirms error
Mayo Danay	756	0	756	0	0	0	100%	Site visit confirms error
West:								
Haut Nkam	40	1	5	0	34	0	75%	warrants investigation
South west								
Manu Fontem	25	2	11	10	2	0	16%	warrants investigation
Center								
Nyong et Kelle	87	0	0	7	80	0	83%	warrants investigation (prob error)
South								
Dja et Lobo	8	0	0	4	4	0	83%	warrants investigation
East								
Lom et Djerem	100	0	0	47	53	0	75%	warrants investigation
TOTAL	1647	3	1403	68	173	0	73%	

6.5. ACTIVE CASE DETECTION

During the course of this consultancy, I undertook missions to parts of the Extreme North, South and Southwest Provinces. For completeness of discussion, I will also report observation in the North Province from an unrelated visit in February 1986.

6.5.1. The Northern Provinces (Extreme North and North)

Extreme North Province: An effort was made to establish the extent of dracunculiasis in the areas surrounding the city of Mora, in the Mayo Sava Division. I went to suggested endemic areas reported in the publications by Issoufa and Ripert (Section 6.1, Figure 6.3).

West of Mora, I visited Koza and Mokolo, in the division of Mayo Tsanaga. Koza missionaries saw their last case, from the city of Assigachiga, one and one half years ago. Government health authorities in Mokolo were unaware of recent guinea worm cases in that area, although CARE officials recalled approximately five cases in the area last year. Missionaries in Zamay and Mokolo were questioned; they had not seen GWD in any of these areas, nor in the towns south of Mokolo (southwest of Mora)--Roumsiki, Sir and Mogode.

North(east) of Mora, officials, nurses, and missionaries in Bogo, Balda, Faadre, Pette (Diamare Division), and Kousseri (Logone et Chari) had neither seen nor heard of guinea worm cases in the last eight to nine years. Nor were there reports from the the large mission hospital at Tokombere, which has an active outreach program in the mountain areas to the south of Mora.

To the southeast of Mora, I traveled from Maroua to the town of Yagoua, through the divisions of Diamare, Kaele, and Mayo Danay. This mission provided interesting information. Between the cities of Maroua and Mouldoudaye, I visited the village of Kaya, which was once known as the regional "capital" of guinea worm, according to a Mouldoudaye health center nurse. Of five elderly (>35 years) individuals interviewed, all reported having an erupting GW in the past four years. The chief of Kaya said that as recently as five years ago, almost all of the adult population was afflicted. Although he insisted that one to two cases still occurred each year among the villagers, I saw no active cases during our visit.

Kaya is not supplied by wells, and the only available water is an open pond. I sampled this source, but found no Cyclops. The chief noted that a change in GW occurrence followed soon after instructions from health authorities (source unknown) to boil all drinking water. However, a severe drought occurred in Northern Cameroon in 1983-1984. A lack of sufficient open water points may have limited intermediate host populations, resulting in an interruption of the transmission cycle.

In contrast, no other reports of active GWD cases were noted to the east. Reports from the Kaele division headquarters (Mouldoudaye) indicated that there were many guinea worm cases in the area before 1980, but none in the last four to six years. No reasons could be determined to explain the decline, although new water projects have been active in the area. In the town of Yagoua, on the Chadian border, I found no information suggesting transmission of guinea worm (See section 6.6.4). The local PMO noted that GWD had once been in that area, and he remembered cases from his childhood.

However, he had not seen a case in five years of practice and public health work in the area. I also visited the SEMRY rice development project, which is located immediately to the north of Yagoua. Health agencies, particularly OCEAC, have surveyed SEMRY workers for parasitic diseases (in particular schistosomiasis) which might be aggravated by water (irrigation) contact. The chief administrator, who was familiar with these health activities, was unaware of guinea worm cases occurring among project workers.

North Province: Follow-up of an unofficial Ministry report (Section 6.3) confirmed guinea worm transmission near the city of Pitoa in the Benoue Division. I visited the village of Banjuma-Toree in February 1986, with Dr. Ncharre Chouaibou, Chief of Health of the North Benoue project. In an informal survey among villagers in 1985, Dr. Chouaibou estimated 25% incidence among the population. My visit was not during the transmission season, although I was able to examine one patient who had persistent infection of a lesion characteristic of GWD.

The origin of the village of Toree is of interest. The people were originally from the Mandara Mountains of the Extreme North Province. They were stimulated to move south by a severe drought in 1984 and by the promise of fertile fields and government services associated with the North Benoue Development Project. This development project was initiated in 1973 for the development of the cotton agriculture, and has encouraged relocation of individuals to work the fields. In addition to the migration of Cameroonians from the Extreme North to this area, a large Nigerian migrant population exists. This village is therefore an example of translocated GWD. It is the only infected village in the region known to medical authorities.

South of the division of Benoue, I visited Poli in the Faro division. This town was reported by Issoufa (1979) to possibly have transmission of guinea worm. MOH officials questioned had no knowledge of any active foci around that city.

6.5.2 Southern Provinces (South and Southwest)

It was important to determine if reports from the southern divisions of the country (Fako and Ocean) were valid (Table 6.3). Transmission in this region of the country would suggest that GWD is more widespread in the URC than previously imagined. In contrast to the north, the southern regions of Cameroon receive relatively high rainfall and there are few stagnant water bodies. Although transmission of dracunculiasis is known to occur under such conditions, this parasitic infection is primarily found in arid conditions.

South Province: One hundred and sixty-four cases of guinea worm were reported to the DPMPH by the Ocean Division in 1985. These reports were investigated by conducting a review of activity forms sent in by the various reporting units at the divisional headquarters in Kribi. One hundred and forty eight (90%) of the reported cases were found to be the result of an error by clerical staff. (The dracunculiasis column was used for registration of ankylostomiasis). Sixteen cases were reported from city of Akom-II. On visiting this hospital, I found these reports were due to a clerical error by local staff. No physicians or nurses had seen cases of guinea worm in Kribi, Akom II, nor in any of the various health outposts along the 80 km route between these two towns (Figure 4.1). I concluded that GWD does not exist in this region of the URC.

Southwest Province: The MOH was notified of eight cases of GWD by the Bota Annex Hospital in the city of Limbe (Victoria), Fako Division of the Southwest Province (Section 6.2). An epidemiologist (Ms. Deborah Agbor-Tabi) from the Epidemiology and Malaria Service, DPMPH, investigated these reports in October 1985 (Annex 6). Her review of records showed 23 patients had been diagnosed since November 1981, all by the same physician. All patients were in the pediatric age group (mean age 23.5 months, range four months-eight years). Five (22%) of the patients were from the Lumpsum quarters section of town, while four (17%) were from New Town. Ms. Tabi was unable to locate any of the patients despite active effort. The report of her investigation contained the following conclusions and recommendations. First, none of the reported cases were verifiable, and no firm conclusions about the presence of transmission of dracunculiasis were possible. Second, the young age of all patients was peculiar. If cases were occurring among children, it was reasonable to assume that many more cases occurred among adults. Private clinics in the area, as well as medical facilities of the Cameroon Development Corporation (CDC)* should be visited in a search for adult cases. Finally, if a record review in local medical facilities did not reveal cases, a community survey should be carried out to determine if cases existed which were not being recognized. During my visit to Limbe, these suggestions were implemented.

I was unable to verify the diagnoses in my interview with the reporting Bota Annex physician. In addition to the young age of the patients, the "guinea worm cases" did not have typical characteristics of the illness. The subcutaneous helminths described were smaller than dracunculids (4-8 cm) and did not emerge or cause ulcerations. Many of the patients reported were still nursing babies; they were not yet drinking water, and so could not have acquired the infection. The worm being observed was perhaps Loa loa.

To speak to other physicians, I visited government facilities (Provincial Hospital, DES Hopitaux), facilities of the Cameroon Development Corporation (CDC central Clinic, Cottage hospital, and CDC Bota Central), and Fobete Clinic Hospital. All doctors were aware of the manifestations of the infection; several had seen cases while in training in Nigeria. Of the 10 physicians questioned, two claimed to have seen GWD (a total of two cases) in the area within the last two years (these physicians were Dr. Grace Ade'-one case at CDC Central Clinic; Dr. K. Prasad-one case at Fobete Clinic Hospital). The medical records of these two cases could not be located, and the supervisors of these young physicians could not verify the diagnoses. In fact, the supervisors (Dr. E Agvor, CDC Central Clinic and Dr. S. Straightfield, Fobete Clinic Hospital) took great exception to these diagnoses, and suggested that I regard them as false. In their combined experience of over 20 years of practice in the Fako area, they had never seen a case.

*The Cameroon Development Corporation (CDC) is a government agency originally developed by the British, which operates in the Southwest Province. The principle interest is in cash crops, such as palm oil, cocoa, rubber, bananas, and pineapple. CDC is a major element of the economy in the Fako Division and most of the rural population which might be susceptible to GWD is housed and employed by the organization. CDC maintains numerous well-attended health clinics and hospitals for its workers.

I then carried out a rapid-assessment, marketplace survey in the vicinities of Newtown and Lumpsum Quarters, where nine of the 23 pediatric cases (39%) originated. This assessment consisted of showing photographs of a foot with an emerging guinea worm to small groups of people in the markets, and asking if they had recognized the disease. All the persons I questioned were astonished at the description of the infection (unlike the usual familiarity with GWD of northern Cameroonians). The people questioned in Limbe confused GWD with elephantiasis (lymphatic filariasis). This kind of response is probably a good indicator of the rarity or complete absence of guinea worm in Fako. However, I did encounter several elderly persons who claimed that GWD had been common in the Fako area in the late 1940's.

I concluded that dracunculiasis is not a health problem in Fako, despite reports of cases from three physicians in the area. The infection is probably not transmitted in this division, and, if cases have occurred, they were likely to have been imported. The unfamiliarity with the manifestations of GWD among the local population is a key determinate in this conclusion. However, it is likely that dracunculiasis was endemic in this area two to three decades ago.

Until further information becomes available, I will list Fako as a nonendemic area for dracunculiasis. The multiple visits by the DPMPH to the Limbe area will increase sensitivity among the medical community to reporting GWD. Improved reporting through the passive surveillance system may identify cases if they occur.

6.6. CONCLUSIONS

- 6.6.1. Surveillance: In some rural areas in the Extreme North and North Provinces, active case detection efforts and other information (from the published literature and anecdotes--Table 6.5) indicates that dracunculiasis is a very important health problem. In addition to the confirmed endemic areas in the Extreme North and North Provinces, there are unconfirmed reports of GWD from Adamaoua and Southwest Provinces which need to be investigated. However, the apparent distribution of this infection is limited. This simplifies surveillance activities, which can be focused and enhanced in these known and suspected endemic areas.

Using all of the information gathered in this consultancy, it was possible to construct a national map, by division, of the known and suspected distribution of dracunculiasis (Figure 6.8). However, much more intelligence about disease distribution is required to target the precise areas for control efforts. A POA must provide the MOH with resources to strengthen surveillance to determine the extent of GWD by district and village throughout these endemic areas.

The official statistics for dracunculiasis in the URC are based primarily on passive case detection. Passive surveillance reported only 254 cases of GWD in the period 1985-1986, a number which suggests that GWD is rare in most of the URC. However, in endemic areas of Cameroon, it is likely that the passive reporting system markedly underreports cases. Evidence of underreporting is clear in Mayo Sava, which is a known focus of GWD transmission in the URC, yet only one case of dracunculiasis was reported from this division in the entire 2 1/2 year

period examined (See Section 7.3 for further discussion on underreporting from Mayo Sava). There are probably several reasons for underreporting of dracunculiasis in passive case detection systems: 1) guinea worm disease is generally a nonlethal condition, and therefore it commands little attention. 2) guinea worm disease is extremely focal in space; one village may be severely affected year after year while neighboring villages are completely spared. This static positional quality with respect to time results in a tendency for unreported foci to remain unreported. 3) the infections occurs almost entirely in rural areas, where health posts are sparse. Many of its rural victims are crippled and cannot reach even nearby health facilities. 4) Finally, there is no simple and effective treatment for an erupting guinea worm. Treatment essentially consists of cleansing, bandaging, and worm extraction. When the villagers realize that little more can be done for the condition, and they lose the incentive to attend clinics.

In other areas of the country, the national reporting system exhibits surprising overreporting of GWD cases due to: apparent mistakes in data key punching on computers, mislabeling or misreading of report forms, and misdiagnosis by nurses and physicians. Therefore, reports through the surveillance system must always be verified, especially in areas where transmission of GWD has not been previously documented. Most errors could be recognized by careful review of the MOH/OCEAC surveillance forms. However, field missions by local or Yaounde MOH personnel are often the only way by which to confirm presence or absence of GWD in an area. The most important aspects of such missions should be to confirm the diagnosis and to determine if the infection was locally acquired. Missions should be considered to verify the validity of GWD cases reported from Mbere, Mayo Banyo, Manyu, Faro, and Mayo-Ray.

TABLE 6.5

Listing of Villages and Cities or Areas Reported
to have Guinea Worm

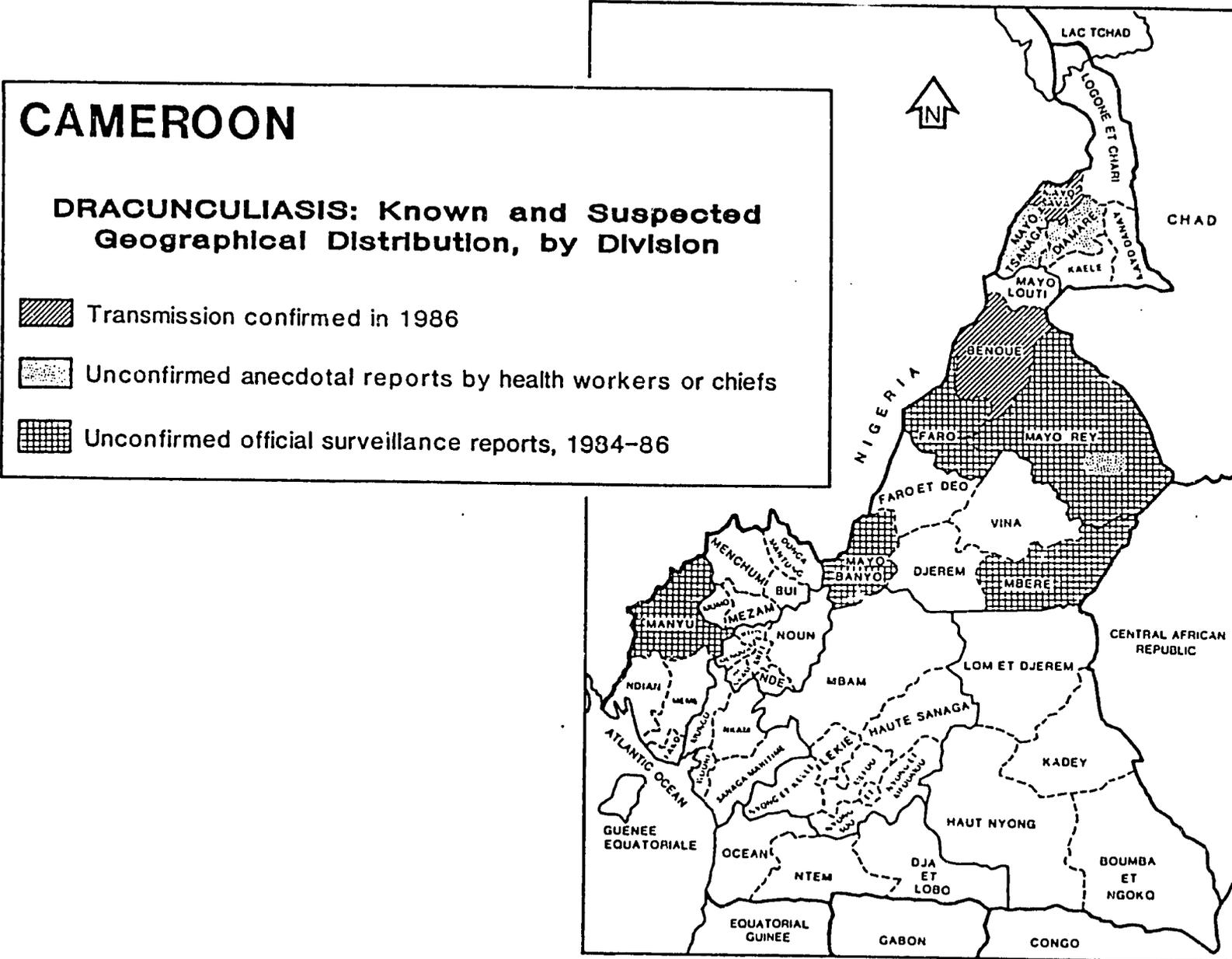
<u>Location, Division</u>	<u>Source</u>
Godigong, Mayo-Sava	Issoufa et al. 1979
Oujilla, Mayo-Sava	
Podokwo, Mayo-Sava	
Poli, Faro	
Yago.a, Mayo Danay	
Bogo, Diamare	
Mokolo, Mayo-Tsanaga	
Koza, Mayo-Tsanaga	Ripert et al. 1979
Kolofata, Mayo Sava	Dr. Kollo Basille Chief of Preventive Medicine Mayo Sava Division Mora, Ext North
Godigong	
Oujilla	
Meme	
Dargala	
Modiaure	
Ouldeme	
Mouktele	
Mora-Massil	
Baldama	
Podokwo Central	
Podokwo North	
Kerawa	
Rey Bouba, Mayo Rey (village-Toboro)	Chief of Preventive Medicine May Rey Division, Tchollire, North

TABLE 6.5 (cont.)

Listing of Villages and Cities or Areas Reported
to have Guinea Worm

<u>Location, Division</u>	<u>Source</u>
Pitoea, Benoue (Village of Foree)	Dr. Ncharre Chouaibou Head Physician of the Northeast Project, Garoua, North Province
Beka, Faro	Dr. Peter-Charles Mafiamba, Special Advisor to the Minister Health, Yaounde, Cameroon
Assigachiga, Mayo Tsanaga	Dr. Eric Davy Adventist Hospital Koza, Ext. North
Kaya, Diamare	Chief of the Village of Kaya, and Public Health Nurse, Moulvoudaye Health Center

FIGURE 6.8

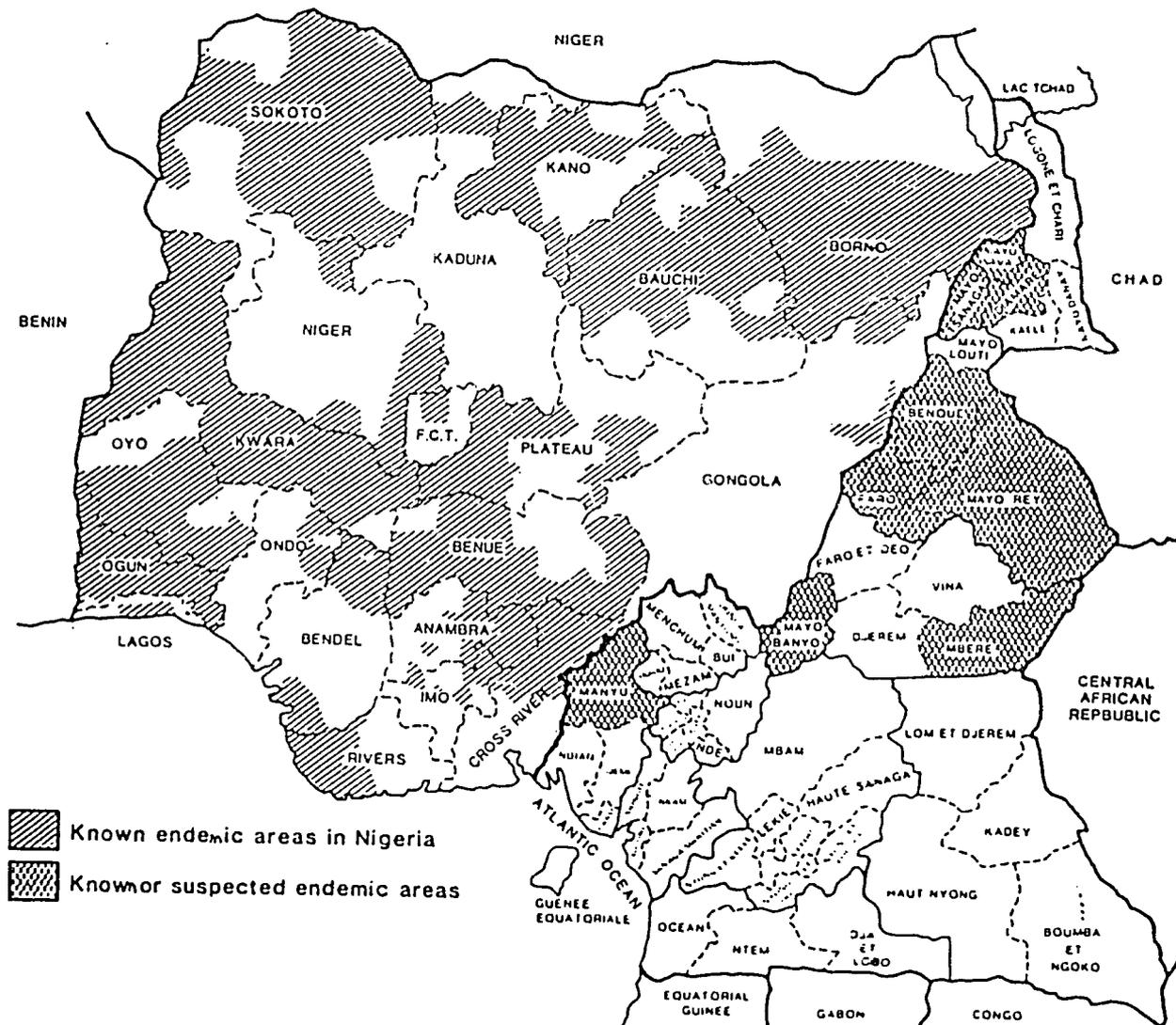


- 6.6.2. Regional Distribution of GWD: The regions of known or suspected GWD in the URC were compared with known endemic areas in neighboring Nigeria (Figure 6.9). Note the correspondence of endemic areas on shared borders. Migration of infected persons across international frontiers is an important factor to consider when planning control and elimination programs; coordination between the national GWD programs of Nigeria and the URC will be desirable. Principal borders of concern are: Mayo Sava, Mayo Tsanaga, and Logone et Chari with Borno and Gongola, Nigeria; Benoue, Faro and Mayo Banyo with Gongola, Nigeria; and Manyu with Cross River and Gongola, Nigeria. Concern should also be given to other northern frontiers. Unfortunately, little is known of GWD prevalence and distribution in Chad and the Central African Republic.
- 6.6.3. Declining Incidence of GWD: Informal discussions with villagers, chiefs, missionaries, researchers, and physicians suggest that the incidence of GWD has markedly declined in the endemic areas. The reasons for the decline, if it has occurred, are unknown. It might be explained by increasing use of improved water supplies, but the severe drought in 1983-84 may also have influenced transmission of GWD in the north.
- At least one instance (Banjuma-Toree, Section 6.5.1.B) was recognized in which migration of people from an endemic to a nonendemic area of Cameroon resulted in the establishment of a new focus of GWD. It is not known if the infection has spread to other villages in the area. The importance of migration of infected peoples due to development projects to the spread of dracunculiasis should be investigated.
- 6.6.4. Population at Risk: The data collected during this consultancy allows a very general estimation of population at risk for dracunculiasis in the URC. All persons residing in rural areas of endemic divisions were assumed to be at risk for acquiring the infection. The rural populations in the endemic divisions were estimated by multiplying divisional populations (Table 4.1) by the percentage of total population living in rural areas (0.816--Fifth National Plan, page 35). In Manyu, Southwest Province, the factor used was 0.614.

The calculated population at risk in areas with confirmed GWD transmission (Mayo Sava and Benoue) is 647,029. In areas with suspected transmission the population at risk is estimated at 731,741. The combined figure of rural inhabitants in areas with known or suspected dracunculiasis transmission is 1,378,770, or 13.3% of the population of the URC.

FIGURE 6.9

DRACUNCULIASIS: Known and Suspected Distribution in Cameroon, Compared with Endemic Areas in Neighboring Nigeria
 (based on WHO: Wkly Epidem Rec, No.34, 23 August 1985, p. 264)



7. THE MAYO SAVA FOCUS OF DRACUNCULIASIS

An important component of the first phase of the POA is a pilot control program in the Division of Mayo Sava (See Volume I: Section 4). The objective should be to eliminate GWD from the division by 1990. The project should be based on utilization of existing institutions (the preventive and the primary health care systems of the MOH; CDS, Genie Rural and Program d'Urgence of the MOA; and CARE). This section will provide background information relevant to this pilot proposal.

7.1. GEOGRAPHY, DEMOGRAPHY AND WATER SUPPLY

The division of Mayo Sava, Extreme North Province, represents a typical sahelian climate zone in Africa. The average temperature (28.6 degrees C) varies by only five degrees in summer and winter seasons, although daily variation may be as much as 20 degrees. The position of the "intertropical front" governs the rainy seasons. Precipitation ranges from 400-1000 mm/year during a rainy season from April to October (Table 7.1). Eighty-five percent of this rain usually occurs in July, August, and September. Severe droughts in 1976 and 1984 recently affected the region.

Table 7.1

Monthly Precipitation, 1985, in Mora, Mayo Sava

Month	Ppt (mm)	Month	Ppt (mm)
Jan	0.0	July	152.3
Feb	0.0	Aug	119.9
Mar	2.8	Sept	153.1
Apr	0.0	Oct	0.0
May	18.2	Nov	0.0
June	90.0	Dec	0.0

Cumulative 536.3

The topography of the division consists of mountains in the central and southwest, which abruptly end in the Mandara plateau (or plain). The Mandara highlands consist of numerous volcanic extrusions with elevations from 600-1,200 meters. The slopes range from 30-75% grade with large granitic boulders and rocks on the surface. The mountains begin just south of the city of Mora (the division seat of the division), where they extend in a discontinuous fashion southwest toward and then along, the Nigerian border. To the east, the Mandara plain descends as it crosses the divisions of Diamare and Mayo Danay, where it becomes the Diamare flood plain of the Logone River near the Chadian border.

The area is densely populated, averaging 50 persons/km², but exceeding 250 persons/km² in the Mora area. Although most people belong to the Mafa, Mora, and Kapsiki tribes, other ethnic groups abound, including the Podokwo, Vame, Mbreme, Ouldeme, Mouktele, and Fulani. Accordingly, it is difficult to generalize about the people, as traditions and languages vary dramatically over small distances. A typical rural family unit consists of one male with three wives, each with two children, all of whom reside in a collection of huts known as a concession. Average village groupings vary in population from 80-400; these are smaller in the mountains. The religion is animist in the mountains, and predominantly Islamic (with some Christianity) in the plain.

The economy is based almost entirely on subsistence farming; overall food consumption of the division is approximately equal to production. Ninety percent of cultivation is by hand, and 10% is by animal labor (in the plain areas). Family members over the age of eight years commonly till the fields with the traditional short-handled hoe. The rainy (GWD) season is the time of the most intense human activity. In the mountains, except where broken by rock outcrops, the ridges are almost totally terraced. The soil has low yield potential for crops, and a poor water capacity. Erosion is considerable and the people take great care to maintain the productivity of the land. Food grain (wet season sorghum, millet) and ground nuts (peanuts) are the main crops, and 80% of cultivatable land is devoted to them. Cotton is cultivated as a cash crop in some areas of the Mayo Sava plain.

In the mountains, water comes from wells, seeps and springs, and many of these sources are dry in the dry season. Ground water resources are nonexistent or impractical to develop. Most mountain communities draw their water from characteristic "traditional wells." These are four to eight meters in diameter with variable depth, averaging about one to three meters during the rainy season. They are beautifully walled with local stone, and have a small stair which provides access. The people descend the stair to a level which requires the placement of their feet in the water, fill a large vase, and return to their concession. Water is usually fetched by women or children, who often walk one to three kilometers over mountainous terrain from their particular village. These drinking sources are also used for bathing (total body immersion) by both sexes.

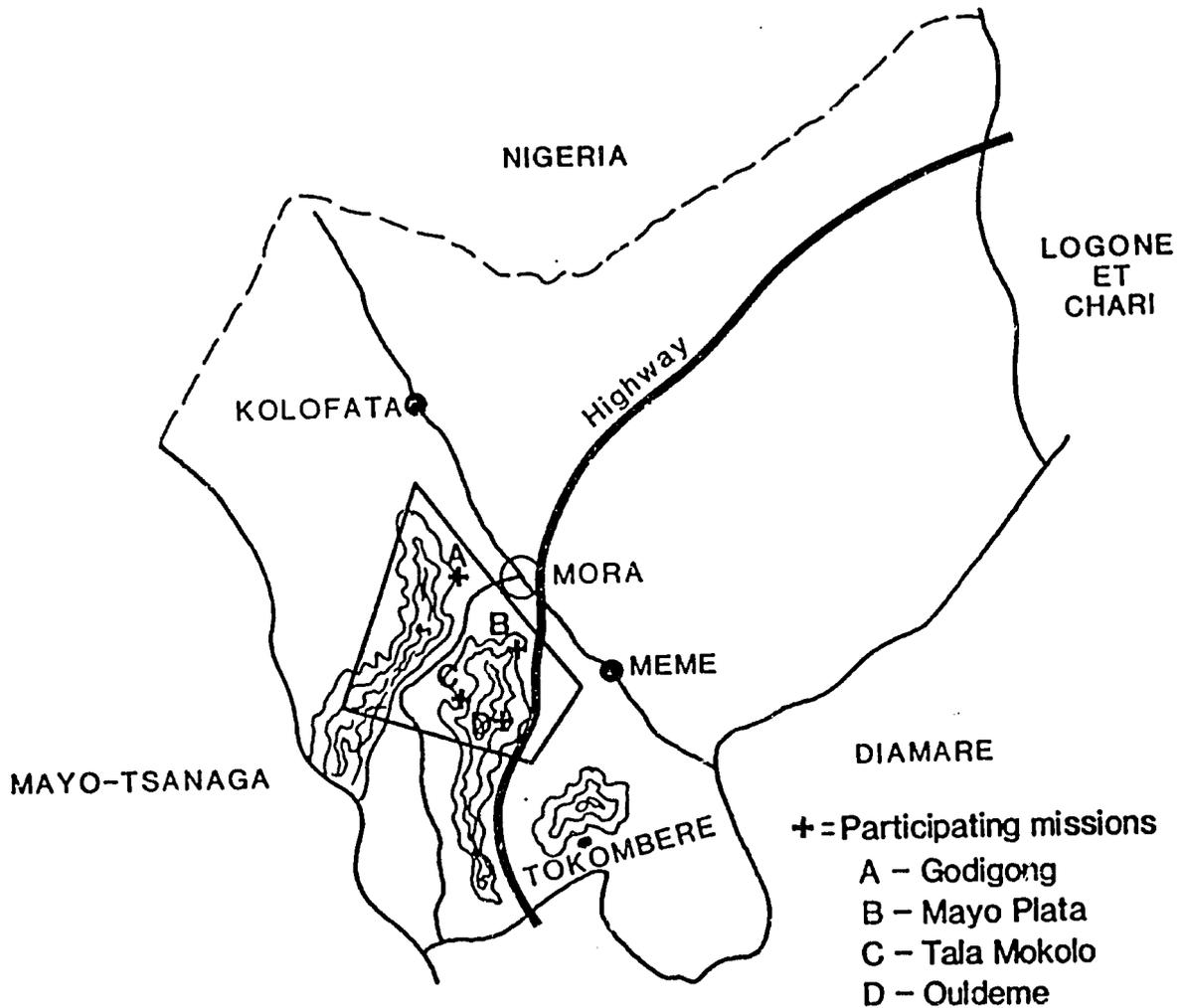
Although water is a particularly critical problem for the mountain people, the entire division suffers from poor potential for ground water development. Wells that supply the villages on the plain are usually 5 to 15 meters in depth and are often dry in the dry season. They are usually unlined, uncovered, and not equipped with pumps. Wells with pumps often suffer from lack of maintenance. Villages supplied with forages (depth >30 meters) usually have water throughout the year.

7.2. THE CONTROL PROGRAM OF THE UNIVERSITY OF BORDEAUX

Since 1983, Professor Christian Ripert of the University of Bordeaux has directed attempts to control GWD in the Mandara Mountains of Mayo Sava. Dr. Kollo Basile, PMO of Mayo Sava, has also been influential in this effort. The project area encompasses the mountain village populations to the southeast of Mora and includes the site of Issoufa's 1975 survey in Podokow Center. (Figure 7.1).

FIGURE 7.1

LOCATION OF UNIVERSITY OF BORDEAUX DRACUNCULIASIS CONTROL EFFORT, MAYO SAVA



The groundwork for the project was laid in the detailed descriptions of 148 traditional water sources in the project area, prepared by Dr. Bridgette Roche in 1982 (Figure 7.2). The strategy is to reduce populations of the GW intermediate host (Cyclops) through seasonal applications of an emulsifiable preparation of the larvacide temephos (ABATE™). Temephos, applied to provide a concentration of one part per million, is placed in all water points once a month for three to four months during the GWD transmission season (July-October). A major problem is a shortage of available manpower. The effort includes personnel of various missionary groups (Godigong, Mayo Plata, Tala Mokolo, and Ouldeme) and occasional volunteer medical students. Supplies of temephos have been donated or paid for by the University of Bordeaux. The project does not receive outside or Cameroonian government funds. Unfortunately, it is difficult to evaluate the success of the project. Limited resources made it impossible to measure pre- and post-intervention changes in GWD incidence among the villagers, or in Cyclops populations (Professor Christian Ripert, personal communication).

I attempted to ascertain the success of the control effort by reviewing the records of temephos applications kept by the missionaries. At the Ouldeme mission, a review showed that 51% of necessary well treatments were accomplished in the three-month transmission season in 1984, and 58% of treatments in 1985. Records from Godigong and Mayo Plata missions were not available for review, and the mission at Tala Mokolo was not visited. The missionary personnel interviewed rarely saw cases of GWD in their clinics, but they noted that the villagers in the areas treated with temephos reported that the incidence of GWD had decreased.

7.3. RAPID EPIDEMIOLOGICAL ASSESSMENT DURING THE COURSE OF THE CONSULTANCY

With MOH counterparts, I was able to perform a house-to-house survey for GWD in four accessible villages of Mayo Sava. Photographs taken during these surveys are shown in Annex . The objectives for the survey were: (1) to determine if GWD remained prevalent in endemic villages (compared to Issoufa's Podokwo survey in 1975); (2) to determine if the incidence of GWD had decreased as a result of control measures by the University of Bordeaux; (3) to pilot questionnaires and surveillance techniques for potential control programs; and (4) to establish a controlled pilot study to determine the effect of temephos on GWD incidence in the area. The methodology of the surveys is given in Annex 5. We chose for study four villages located near the mission at Mayo Plata (Figure 7.3). The villages were selected based on the following criteria: (i) GWD cases were known to exist in these villages, and (2) the villages were representative of the two ecological zones of transmission (mountain and plain) present in Mayo Sava.

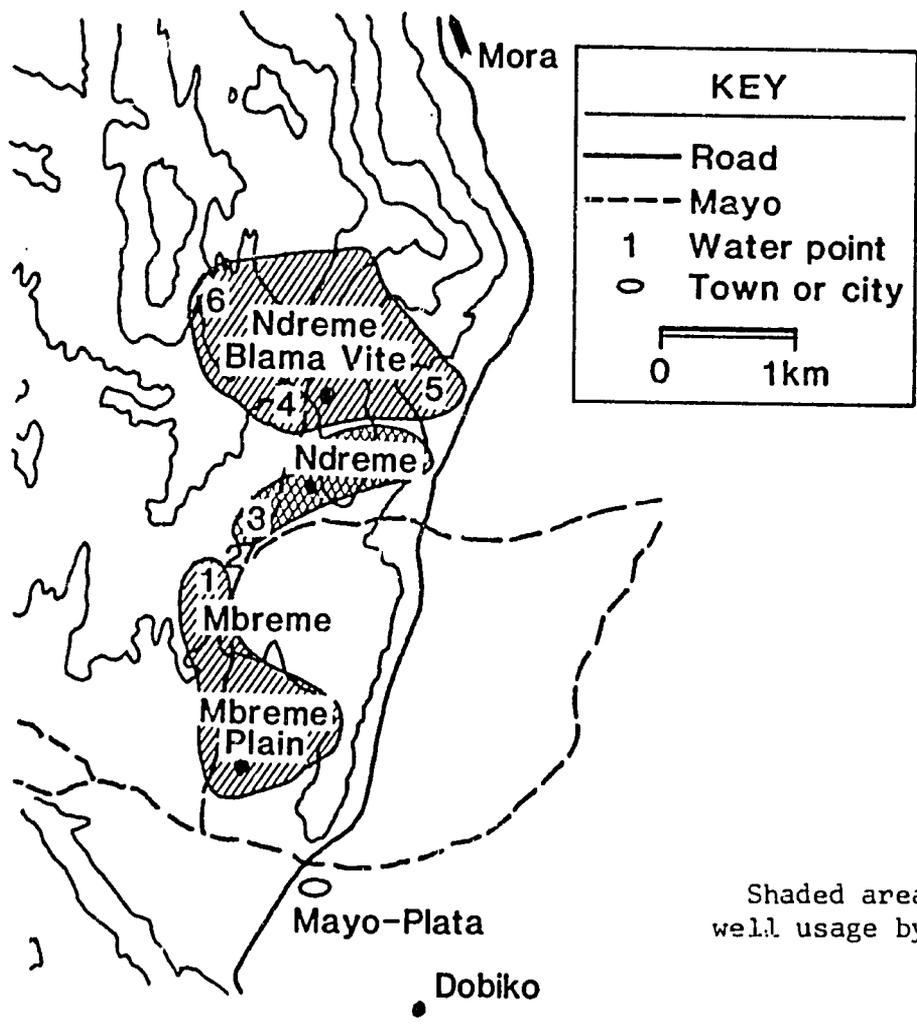
We chose two remote mountain villages, each of which used different traditional wells as sources of water (Figure 7.3)--Ndreme (population 121) and Ndreme Blama Vite (population 140). The people were of the same ethnicity (Mbreme tribe, language Vame, name for GWD=Nduzai) Another surveyed village of similar ethr city (Mbreme Plain--population 61) was considered transitional; the people had moved from their original mountain village (Mbreme), approximately seven years ago. Mbreme Plain continued to use the traditional water source of the parent village (Figure 7.3). All of the water sources of these three villages had been treated with temephos (198?, 1984, 1985) in the University of Bordeaux control scheme, although the details of the applications are unknown. No treatments had been administered in the 1986 GWD transmission season. I found Cyclops in water samples taken from all of the wells suppling these three villages.

Dobiko (population 123) was chosen as representative of an established plain village. The people had no recent history of mountain living, and were of different ethnicity (Ouldeme, language Ouldeme, name for GWD=Tan-zi)) from those in the other villages surveyed. There were five hand-dug wells (supplied by the local Catholic mission) aproximately seven meters deep which supplied the village. None of these wells were walled or covered. All of the wells were sampled for Cyclops; two were positive.

The results of our survey were similar to those of Issoufa (1979) (Section 6.i). We found a (crude) GWD prevalence of 31% among the population (138 of 445) of the villages surveyed, with a range from 6.6-45.4%. Patients had an average of 1.6 emergent worms, and some degree of disability was observed in 20-40% of those afflicted. Males and females were equally infected (67/225 females and 71/220 males). Children younger than five years had no history of infection, whereas 87.4% (160/183) of persons over 20 had a history of a GW eruption at least once in their lives. At the time of the survey, the villages on the plain (Mbreme Plain and Dobiko) had a lower prevalence than the remote mountain villages (Table 7.2).

Figure 7.3

SURVEY FOR DRACUNCULIASIS, MAYO SAVA DIVISION, JULY 1986



Shaded areas represent well usage by surveyed villages

Table 7.2

YEAR	<u>GWD Prevalence 1985 and 1986,* by village</u>				
	MBREME PLN (n=61)	NDREME (n=121)	NDREME BLAME (n=140)	DOBIKO (n=123)	TOTAL (n=445)
1985	0.0%	33.9%	25.7%	13.0%	20.9%
1986	6.6%	45.4%	40.0%	18.7%	31.0%

In all villages the prevalence of GWD in 1986 was greater than that reported (by history) in 1985 (Table 7.2). This increase may be due to recall bias in the surveyed population. However, the prevalence in 1985 may have been unusually low (compared to 1984 or 1983, for example) due to suppressed transmission in 1984 from severe drought. In this case, the figures for 1986 would represent a return to normal prevalence values.

The survey confirms that GWD remains an important preventable health problem in Mayo Sava. In addition, it showed the inefficiency of a passive surveillance system for identifying GWD. In the four villages visited, 138 cases were identified, but only one case was reported from the entire division in 1986. For unknown reasons, GWD transmission is less intense in the plain villages. Although caution must be taken in drawing conclusions from this limited assessment, temephos applications appear ineffective in controlling transmission. The results emphasize the need for the MOH to further evaluate, through controlled studies, the efficacy of temephos in the mountain areas. Such a study should begin in the villages of Nbrema and Nbrema Blama Vite, using the data collected during the consultancy as baseline. (Annex 5).

7.4. LOCAL WATER PROJECTS

The Community Development Service (CDS) of the MOA provides to many of the local well drilling operations a list of villages most in need of water. Due to limited resources available for well drilling, CDS bases priorities on: (1) the distance villagers must walk to their current water source; (2) the potability of current water source; (3) the size of the population to be served by the new water source; and (4) the shortage of water experienced by the population during the dry season. There is little or no input from health authorities pertaining to the placement of new water supplies.

The most important agencies for water drilling operations in Mayo Sava are the MOA (Genie Rural), FSAR, and Program d'Urgence), and CARE. Government authorities also contract with other organizations for construction of new water sources. Most projects for water development are directed to the towns and villages on the plain. Mountain villages are mostly inaccessible to drilling operations. An example of the drilling schedules for Genie Rural in Mayo Sava is given (Table 7.3).

*The survey was carried out in mid-July, which is early in the transmission season. In all likelihood, the 1986 figures are underestimates since many persons were still asymptomatic at the time of data collection.

Table 7.3

Drilling Schedule/ Genie Rural/ Mayo Sava
1983-86

Year	Wells
1983-84	27
1984-85	15
1985-86	20

Although CARE/Mokolo has principal operations in the division of Mayo Tsanaga, the organization has extended activities in the recent past to the division of Mayo Sava and Diamare. There are approximately 27 mobile development and health agents operating in this tri-divisional region who frequently visit remote villages.* The CARE water provision program (Table 7.4) includes a health component where the villagers receiving wells are instructed about prevention of water-related illness. A CARE pump guard program trains a selected villager to oversee the well (including protection of the water source from contamination). There is no discussion of GWD in any of these health programs.

Table 7.4

Year	Wells Provided by CARE/PUITS DU NORD Program			Total
	Mayo Tsanaga	Mayo Sava	Diamare	
1981	6	-	-	6
1982	12	2	-	14
1983	17	3	-	20
1984	16	5	6	27
1985	15	11	9	35
<u>Total</u>	66 (64.7%)	21 (20.6%)	15 (14.7%)	102 (100%)

Addition information of water projects in northern Cameroon, particularly the CARE project, is presented in Water and Sanitation for Health (WASH) Project technical reports Number 5 and 75 (Tomaro, 1983; Struba, 1981).

*CARE and CDS utilize the "village committee" concept to mobilize villages (Isley, 1977).

PROPOSED SCOPE OF WORK

I. GENERAL DESCRIPTION:

A. USAID will respond to a request by the Government of Cameroon (GOC) for a consultant to assist the Ministry of Health (MOH) of the GOC in preparing a National Plan of Action (POA) for the elimination of dracunculiasis from that country. This request was stimulated by a recent resolution of the 39th World Health Assembly for the elimination of this parasitic infection. Co-sponsors of the resolution include the GOC and the United States of America. One of the immediate goals is the preparation of a detailed POA for all endemic countries.

B. Current evidence suggests that dracunculiasis occurs only in the Mandara Mountains of the extreme north of Cameroon. If this is so, the parasite probably could be eliminated from the country with relatively little investment. However, there is no routine surveillance by the MOH for this condition. The last published studies on dracunculiasis in Cameroon were in the late 1970's and there is anecdotal evidence that the infection has spread to other areas further south. It has been suggested that this is a result of movement of infected populations stimulated by developmental programs.

C. To accomplish the scope of work, a consultant will need 4-6 weeks in-country. The scope of work entails a review of available information, site visits to determine the geographic extent of dracunculiasis in Cameroon, evaluation of data collection and surveillance methods, and preparation of a POA to control the infection's transmission. All activities will be performed with direct cooperation and input by MOH officials, USAID personnel, and workers associated with organizations or academic institutions with relevant interests or experience in the endemic areas.

D. The consultant should be TDY from the Centers for Disease Control. This is consistent with that institution's role in noting the special opportunity that WHO International Drinking Water Supply and Sanitation Decade would provide regarding the control or elimination of dracunculiasis in endemic areas. Since the declaration of the decade, CDC has been designated WHO Collaborating Center for Research, Training and Control of Dracunculiasis. It has actively promoted the provision of safe water supplies to populations affected by dracunculiasis and provided personnel to assist with epidemiologic assessments.

II. SPECIFIC TASKS:

- A. En route to Cameroon, attend the African Regional Conference on Dracunculiasis in Niamey, Niger, July 1-4, 1986.
 - B. The consultant will assemble and review written materials, statistic publications and oral reports on cases of dracunculiasis in Cameroon. Interviews should be conducted with key officials and representatives of GOC agencies and bilateral and international organizations. From such information he will construct a map of potential transmission sites of dracunculiasis in the country.
 - C. In addition, the consultant will assess the existing health infrastructure, the current epidemiologic surveillance system, and the status of current water and sanitation projects in the country relative those endemic areas. Methods of improving nationwide surveillance will be investigated.
 - D. A 2-3 week site visit will be made to the Mandara Mountains to evaluate the conditions of disease transmission and the feasibility of various control measures in this endemic area. In addition, appropriate epidemiologic methods for evaluation of control measures, tailored to actual conditions, should be piloted. The consultant will also evaluate the feasibility of using MOH infrastructure or missions in these areas as a means to measure outcome through surveillance or periodic survey.
 - E. The consultant should attempt to document the limit of dracunculiasis in Cameroon in the best possible manner. 1-2 weeks may be required for travel to other areas of the country to investigate villages reported to have dracunculiasis transmission.
 - F. The consultant will provide a draft document (in English) to USAID prior to departure outlining the preliminary findings of the investigations and a POA. The conclusions and recommendations will be discussed with USAID and MOH officials before the consultant departs Cameroon.
 - G. If time permits, the consultant will spend one day with USAID/VBC personnel in Washington en route to Niamey and Cameroon.
 - H. On return to the United States, the consultant will again meet with USAID/VBC personnel for debriefing and will draft recommendations and PO for review.
 - I. A final report shall be submitted to USAID and the MOH, GOC, within 30 days of consultant's departure. A French version will be submitted as soon as it becomes available.
- 65

J. The consultant should confer with Dr. C. Ripert at the University of Bordeaux regarding previous dracunculiasis control efforts by Dr. Ripert's group in the Mandara Mountains of Cameroon. Dr. Ripert is a leading expert on dracunculiasis in Cameroon, and has extensively mapped water sources of the endemic areas of the country. Dr. Ripert has agreed to provide materials, maps and other documents necessary to locate these transmission sites. In addition, it will be important to discuss with Dr. Ripert's staff other important items to be included in the POA, to determine the modus operandi of a control program, and to acquire names of important persons in the endemic areas.

III. OTHER USAID SUPPORT TO INCLUDE:

- A. Ten kilogram excess baggage allowance voucher before travel.
- B. In-country travel authorization, including air travel to the north, rental vehicles, AID vehicles, or DMS vehicles, with driver. Provision of Orde d'Mission by MOH with assistance from USAID/Cameroon.

DPD/CID/FRichards/jk Doc. 16620

66

ANNEX 1

ANNEX 1

DATES OF TRAVEL AND PERSONS MET

I. Date and Places of Travel:

	Washington, DC	June 27, 1986
	Niamey, Niger	June 29-July 6, 1986
Cameroon		July 7-August 15, 1986

II. Purpose of Travel:

In June, 1986, Dr. Peter-Charles Mafiamba, Special Advisor to the Minister of Health, Government of Cameroon requested a consultant to assist in preparing a National Plan of Action (POA) for the control and elimination of dracunculiasis from that country. The United States Agency for International Development (USAID), Vector Biology Control (USAID/VBC) Project responded to this request. Through a previous inter-institutional (PASA) agreement between USAID and the Centers for Disease Control, funding was secured for an epidemiologist to go to Cameroon to work with MOH officials in developing a draft POA for consideration by the MOH. Enroute to this Cameroon, the consultant attended the Workshop on Control of Dracunculiasis in Africa, held in Niamey, Niger, July 1-3.

This assignment was consistent with CDC's role as a WHO Collaborating Center for Research, Training and Control of Dracunculiasis. The scope of work for the consultancy entailed a review of available information on GWD in Cameroon, site visits to determine the geographic extent of the disease, evaluation of current (as well as the development of new) data collection and surveillance methods, and the development of a POA.

III. Summary of Activities:

<u>Date</u>	<u>Place</u>	<u>Purpose</u>
6/27/86	<u>Washington, D.C.</u>	Confer with USAID officials
6/29-7/6	<u>Niamey, Niger</u>	Conference: Workshop on Control of Dracunculiasis in Africa
7/7-12	<u>Yaounde, Cameroon</u>	1) Meeting of Ministry of Health and USAID officials 2) Protocol Preparation 3) Initial review of national dracunculiasis surveillance

ANNEX 1

- | | | |
|-----------|---|--|
| 7/13-7/20 | <u>Mora, Cameroon</u>
(Extreme North Province) | 1) Field pilot survey of villages endemic for GWD
2) Discussions with local health activists, chiefs and officials of the Mayo-Sava Division
3) Pilot Control Project initiation |
| 7/21-7/23 | <u>Maroua, Cameroon</u>
(Extreme North Province) | 1) Discussions with Provincial officials
2) Trip to Yagoua as followup on 700 GWD cases reported in 1984 |
| 7/24-7/30 | <u>Yaounde, Cameroon</u> | 1) Further review of GWD surveillance
2) Collection of relevant documents to the water decade |
| 7/31-8/1 | <u>Kribi, Cameroon</u>
(Ocean Province) | 1) Review of local GWD statistics
2) Interviews with local officials and physicians |
| 8/2-8/5 | <u>Limbe, Cameroon</u>
(Southwest Province) | 1) Review of local GWD statistics
2) Visiting with local officials and physicians
3) Marketplace survey |
| 8/6-8/15 | <u>Yaounde</u> | 1) Preparation of Draft Plan of Action (Conclusions and Recommendations)
2) Meetings with government and non-government officials for Review of Conclusions and Recommendations |

IV. Principal Persons Met:

Ministry of Health, Government of Cameroon

Yaounde

Professor Victor Anomah Ngu
Minister of Health

Ms Isabelle Bassong
Secretary of State for Health

Dr. Peter Charles Mafiamba
Special Advisor to the Minister of Health

ANNEX 1

Dr. Wanji Ngah Richard
Delegate for Health
Central Province

Dr. Jean-Marie Bob Oyono
Assistant Director of Preventive Medicine and Public Hygiene

Dr. Daniel Mfonfu
Chief, Epidemiology and Malaria Service
Department of Preventive Medicine and Public Hygiene

Sylvester Ndeso Atanga, MPH
Asst. Chief, Epidemiology and Malaria Service
Department of Preventive Medicine and Public Hygiene

Ms Deborah Agbor-Tabi, MPH
Epidemiologist, Epidemiology and Malaria Service
Department of Preventive Medicine and Public Hygiene

Other Provinces

Dr. Kollo Basile
Chief of Preventive Medicine
Mayo-Sava Division, Extreme North Province

Dr. John Lyonga Willibrord
Chief of Preventive Medicine, Fako Division
Lembe, Southwest Province

Dr. Kwankam Chaddens Yonga
Delegate for Public Health
Buea, Southwest Province

Dr. Ousmanou Dawaye
Chief Preventive Medicine Officer
Mayo-Danai Division, Extreme North Province

Dr. H. Issoufa
Regional Delegate for Health
Maroua, Extreme North Province

Dr. Christopher Ayissi
Chief of Preventive Medicine
Kribi, Ocean Province

Dr. (Mrs.) E. Tchwenko
Chief Pediatrician, Bota-Annex Hospital
Limbe, Southwest Province

Dr. Cab Mba
Director, Provincial Hospital
Limbe, Southwest Province

Dr. Ncharre Chouaibou
Chief of Preventive Medicine
Benoue Province, B.P. 17, Garoua

ANNEX 1

Other Governmental Organizations

Mr. Johnson B. Agborsangaya
Principal Engineer of Civil Construction
Secretary of the National Water Committee
Director of Energy and Water
Ministry of Mines and Power, Yaounde

Mr. Didjan Ahmado:
Prefet
Mayo-Sava Division, Extreme North Province

Mr. Alphonse Wage
Chief of Administration and General Affairs, Ministry of Agriculture
Mayo-Sava Division, Extreme North Province

Mr. Pierre Dama
Section Chief, Rural Engineers, Ministry of Agriculture
Mayo-Sava Division, Extreme North Province

Mr. Jean Dounla
Provincial Chief, Rural Engineers, Ministry of Agriculture
Maroua, Extreme North Province

Dr. Emil Tutuwan
Sub-director for Human Settlement and Environment
Ministry of Plan, Yaounde

World Health Organization (WHO)

Dr. Fred Wurapa
Regional Office for Africa
Brazzaville, Peoples' Republic of the Congo

Dr. Roger Moluba
Coordinator-Representative, WHO
Niamey, Niger

Dr. Ilunga Bitokwela
Coordinator-Representative, WHO
Yaounde, Cameroon

Dr. Pierre Robert Dausse
Research Programs Development, Health Development Office, WHO
Bamako, Mali

United States Agency for International Development (USAID)

Dr. Victor A. Barbiero
Vector Biology Control, AID
Washington, D.C. 20523

Dr. Richard Stockard
Washington, D.C. 20523

ANNEX 1

Dr. Dennis Warner
Water and Sanitation for Health Project
Arlington, VA. 22209

Ms. Bibi Suzanne Essama
Project Officer, Health, Population and Nutrition
Yaounde/AID

Mr. Gary Leinen
Project Officer, Health, Population and Nutrition
Yaounde/AID

Mr. Robert Schmeding
Director, Health, Population and Nutrition
Yaounde/AID

Ms. Mossina Jordan
Assistant Mission Director
Yaounde/AID

Mr. Christopher Phelps
Agriculture and Rural Development
Yaounde/AID

Dr. Raoult Ratard
Chief, Tulane Technical Assistance Team, Schistosomiasis Project
Yaounde/AID

Other Non-Government Organizations

Ms Charlotte Johnson Welsch
Health Projects Coordinator
CARE, Yaounde

Dr. Edmund O. Agvor
Surgeon, Cameroon Development Corporation
CDC Central Clinic, Tiko, Southwest Province

Mr. Alan Brown
Assistant Director
Save the Children, Yaounde

Mr. Ellis Brown
Assistant Director and Health Project Development Officer
Peace Corps, Yaounde

Ms Lauren Clements
Peace Corps Volunteer-Community Development
Mora, Extreme North Province

Father (Dr.) Christian Arrunche
Centre de Promotion de la Sante
Tokombere, Extreme North Province

ANNEX 1

Mr. Robert Nyonse, Adjoint Director
Societe d'Expansion et Modernisation de la Riziculture de Yagoua (SEMRY)
Yagoua, Extreme North Province

Dr. Vim Alvoot
BELGIAN COOPERATE, School of Nursing
Maroua, Extreme North Province

Mr. Jean Joel Kenzeta, Chief of Statistics
Organization de Coordination pour la Lutte contre les Endemie en Afrique
Central (OCEAC)
Yaounde

Dr. S. Straightfield
Fobete Clinic Hospital
Tiko, Southwest Province

Sister Catherine Inibena
Mayo Ouldeme Catholic Mission
Mora, Extreme North Province

Ms Ruth Sandoz
Godigong Presbyterian Mission
Mora, Extreme North Province



WORLD HEALTH ORGANIZATION
ORGANISATION MONDIALE DE LA SANTE

THIRTY-NINTH WORLD HEALTH ASSEMBLY

15 May 1986

ELIMINATION OF DRACUNCULIASIS

The Thirty-ninth World Health Assembly,

Deploring the considerable adverse effects of dracunculiasis (Guinea-worm disease) on health, agriculture, education, and the quality of life in affected areas of Africa and southern Asia, where over 50 million persons still remain at risk of the infection;

Recognizing the special opportunity afforded by the International Drinking Water Supply and Sanitation Decade (1981-1990) to combat dracunculiasis, as noted in resolution WHA34.25;

Stressing the importance of maximizing the benefits to health by using an intersectoral approach in the context of primary health care during the remainder of the Decade;

Aware of the progress achieved to date by the Indian Guineaworm Eradication Programme, the increasing awareness and actions beginning to be taken against the disease in Africa, and the successful elimination of the disease in several countries:

1. ENDORSES the efforts to eliminate this infection, country by country, in association with the International Drinking Water Supply and Sanitation Decade;

2. ENDORSES a combined strategy of provision of safe drinking water sources, active surveillance, health education, vector control, and personal prophylaxis, for eliminating the infection;

3. CALLS on all affected Member States:

(1) to establish as quickly as possible, within the context of primary health care, plans of action for eliminating dracunculiasis, giving high priority to endemic areas in providing safe sources of drinking water;

(2) to intensify national surveillance of dracunculiasis, and report the resulting information regularly to WHG;

4. INVITES bilateral and international development agencies, private voluntary organizations, foundations, and appropriate regional organizations:

(1) to assist countries' efforts to add, within the context of primary health care, a dracunculiasis control component to ongoing or new water supply, rural development, health education, and agricultural programmes in endemic areas by providing required support;

(2) to provide extrabudgetary funds for this effort;

5. URGES the Director-General:

(1) to intensify international surveillance so as to monitor trends in prevalence and incidence of this disease, and encourage cooperation and coordination between adjacent endemic countries;

(2) to submit a report on the status of these activities in the regions concerned to the Forty-first World Health Assembly.

* * * * *



WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTE

TRENTE-NEUVIEME ASSEMBLEE MONDIALE DE LA SANTE

15 mai 1986

ELIMINATION DE LA DRACUNCULOSE

La Trente-Neuvième Assemblée mondiale de la Santé,

Déplorant les effets néfastes considérables de la dracunculose (filariose due au ver de Guinée) sur la santé, l'agriculture, l'éducation et la qualité de la vie dans les zones atteintes d'Afrique et d'Asie méridionale, où plus de 50 millions de personnes restent exposées au risque de l'infection;

Reconnaissant que la Décennie internationale de l'eau potable et de l'assainissement (1981-1990) offre une occasion spéciale de combattre la dracunculose, ainsi qu'il est noté dans la résolution WHA34.25;

Soulignant qu'il est important de optimiser les effets pour la santé d'une action dans ce sens en adoptant une approche intersectorielle dans le contexte des soins de santé primaires pendant le reste de la Décennie;

1/2

Considérant que le programme d'éradication de la dracunculose en Inde a marqué des progrès, qu'une sensibilisation accrue au problème est observée en Afrique où sont engagées des mesures de lutte et que plusieurs pays sont parvenus à éliminer la maladie:

1. APPROUVE les efforts fournis pour éliminer cette infection, pays par pays, en liaison avec la Décennie internationale de l'eau potable et de l'assainissement;
2. SOUSCRIT à une stratégie mixte comportant la mise en place d'approvisionnements en eau de boisson saine, une surveillance active, des activités d'éducation pour la santé, des opérations de lutte antivectorielle et des mesures de prophylaxie individuelle pour l'élimination de l'infection;
3. DEMANDE à tous les Etats Membres concernés:
 - (1) d'élaborer le plus rapidement possible, dans le contexte des soins de santé primaires, des plans d'action pour l'élimination de la dracunculose prévoyant en priorité la mise en place d'approvisionnements en eau de boisson saine dans les zones d'endémicité;
 - (2) d'identifier la surveillance nationale de la dracunculose et d'en communiquer régulièrement les résultats à l'OMS;
4. INVITE les organismes bilatéraux et internationaux de développement, les organisations volontaires privées, les fondations et les organisations régionales compétentes:
 - (1) à aider les pays à inclure, dans le contexte des soins de santé primaires, des activités de lutte contre la dracunculose dans les programmes en cours ou prévus d'approvisionnement en eau, de développement rural, d'éducation pour la santé et de développement agricole dans les zones d'endémicité en fournissant le soutien voulu;
 - (2) à fournir à cette fin des fonds extrabudgétaires;
5. PRIE INSTAMMENT le Directeur-Général:
 - (1) d'intensifier la surveillance internationale afin de suivre les tendances de la prévalence et de l'incidence de la maladie, et d'encourager la coopération et la coordination entre les pays d'endémicité limitrophes;
 - (2) de soumettre à la Quarante et Unième Assemblée mondiale de la Santé un rapport sur l'état d'avancement de ces activités dans les régions concernées.

* * * * *

From: Workshop on Dracunculiasis in Africa
Niamey, Niger July 1-3, 1986

Guineaworm Wrap-Up No. 13: page 2, July 25, 1986

The workshop unanimously endorsed WHA resolution 39.21 (reproduced in the previous issue of Guineaworm Wrap-Up) and expressed hope that the resolution will be reviewed and supported by the African Regional Committee of WHO at its September 1986 meeting. Invitations were also extended to OCCGE (L'Organisation de Coordination et Coopération pour la Lutte Contre les Grandes Endemies), OCEAC (Organisation de Coördination pour la Lutte Contre les Endemies en Afrique Centrale), and WAHC (West African Health Council) to increase their roles in the control and elimination of dracunculiasis.

* * * * *

WORKSHOP RECOMMENDATIONS

Considering the social and economic impact of dracunculiasis and the necessity to break the epidemiologic cycle of the disease as a way to attain the social objectives of Health For All in the Year 2000 (HFA/2000), workshop participants formulated some recommendations on the steps to be taken for the control and elimination of the disease. These recommendations are directed to the Governments of the countries affected by the disease, the international organizations within the United Nations, and intergovernmental, non-governmental, and donor agencies.



I. Governments affected by dracunculiasis are invited to:

1. Put in place or reinforce a national surveillance system based on obligatory notification of cases of the disease.
2. Separate the reporting of dracunculiasis from other filarial infections.
3. Utilize preferentially active surveillance and passive and sometimes combined methods to gather reliable data to be used to notify cases to bordering countries and interested organizations (principally WHO/AFRO), but above all as a basis for appropriate decisions and actions.
4. If possible, before the end of 1987, develop a national plan of action with precise objectives and a specific operating strategy.
5. Increase the inter- and intra-sectorial cooperation (particularly with water services) to maximize the impact of disease control activities.

6. Utilize mass media to sensitize and mobilize people through publicizing a better understanding of the epidemiologic cycle of the disease and how to apply simple and effective measures that will eliminate the disease.
7. Collaborate closely with neighboring countries to coordinate actions to implement strategies to combat the disease.
8. Demonstrate their national commitment by providing in their national budgets the necessary funds to put their action plans into effect.
9. Organize every two years national meetings on the control and research of dracunculiasis.

II. World Health Organization (WHO):

The Director General and Regional Director (AFRO) of the WHO are invited to:

1. Assist countries in putting together coherent and effective plans of action.
2. Reinforce its cooperation with the countries by placing at their permanent disposition epidemiologic officials to be based at the Subregional Office, Bamako, and eventually at headquarters.
3. Facilitate training health personnel in this subject.
4. Improve "feedback" to the countries on the epidemiologic situation and the development of control programs.
5. Assist in mobilizing extra-budgetary funds to sustain the action plans of member countries.
6. Support operational research on dracunculiasis by specifying it as a part of the budget of the Tropical Disease Research (TDR) Programme.
7. Establish epidemiologic standards.
8. Assure the follow-up of regional workshops on the control and operational research on the disease during the first quarter of 1989.

III. Intergovernmental, Non-Governmental, and Bilateral Organizations:

They are requested to collaborate closely with responsible government officials and WHO representatives in the countries to:

1. Mobilize external resources in supporting the national plans of action.

2. Sustain operational research on dracunculiasis including studies of the impact of the disease on agricultural production and the effectiveness of disease control interventions.

IV. Cooperation with Onchocerciasis Control Programme (OCP):

The participants in the Workshop have appreciated the outstanding success of the OCP. Given that the ecological zones of onchocerciasis and dracunculiasis often overlap, and considering the new policy of OCP in the acceleration of HFA/2000 on the basis of primary health care, the participants strongly invite the OCP Director, the Regional Director of WHO (AFRO), the Director General of WHO, their collaborators, and the governments to rapidly study the possibility of integrated or complementary action in surveillance and vector control.



85 / 7 5 8 30 MAI 1985
SECRET N° DU

portant création du Comité National de l'Eau.

LE PRÉSIDENT DE LA RÉPUBLIQUE,

VU la Constitution ;

VU la loi n° 84/013 du 5 décembre 1984 portant régime de l'eau ;

DECRETE

ARTICLE 1er. - Il est créé un Comité National de l'Eau, dont le siège est à Yaoundé.

ARTICLE 2. - Le Comité National de l'Eau est un organe consultatif chargé d'assister le Gouvernement dans la formulation de sa politique de l'eau et des problèmes y afférents, ainsi que dans la recherche des voies et moyens de sa mise en oeuvre.

A ce titre :

- a) il propose les grandes orientations de la politique de l'eau, notamment le plan national d'utilisation des ressources en eau ;
- b) il donne son avis sur les projets des textes législatifs et réglementaires relatifs à la politique de l'eau, notamment :
 - la création d'un code de l'eau (inventaire, conservation, protection et utilisation des ressources en eau, assainissement, etc..)
 - la tarification et la taxation de l'eau ;
 - tout autre problème relatif à l'eau dont il est saisi par le Gouvernement.

ARTICLE 3. - Le Comité National de l'Eau est présidé par le Ministre des Mines et de l'Energie ou son représentant.

Sont membres du Comité :

- le Directeur de l'Energie et de l'Eau qui en assure le Secrétariat ;

.../...

- le Directeur des Mines et de la Géologie;
- le Directeur de la Programmation ;
- le Chef de la Division de l'Aménagement du Territoire ;
- le Directeur du Centre de Recherche Hydrologique ;
- le Directeur du Génie Rural ;
- le Directeur du Développement Communautaire ;
- le Directeur de la Médecine Préventive et de l'Hygiène Publique ;
- le Directeur de la Météorologie ;
- le Directeur des Domaines ;
- un Représentant du Ministère Chargé de l'Administration Territoriale ;
- un Représentant du Ministère chargé de l'Elevage, des Pêches et des Industries Animales ;
- le Directeur Général de la Société Nationale des Eaux du Cameroun ;
- le Directeur Général de la Société Nationale d'Electricité du Cameroun

Toute autre personne morale ou physique, en raison de sa compétence, peut être invitée à participer ou à se faire représenter aux travaux du Comité.

ARTICLE 4.- Chaque membre peut soumettre à l'examen du Comité toutes questions particulières du domaine qu'il représente. Il doit dans ce cas en informer le Président et lui faire parvenir le dossier y afférent au moins trente (30) jours avant la réunion du Comité.

ARTICLE 5.- Le Comité National de l'Eau se réunit deux fois par an en session ordinaire. Il peut se réunir en session extraordinaire sur convocation de son Président

ARTICLE 6.- Le Secrétaire est chargé de préparer les questions à inscrire à l'ordre du jour de chaque réunion. Il rend compte au Comité, semestriellement, de la suite donnée à ses recommandations.

ARTICLE 7.- Le Comité National de l'Eau crée en tant que de besoin des commissions spécialisées dont il fixe les attributions et les modalités de fonctionnement.

ARTICLE 8.- (1) Les crédits nécessaires aux travaux et au fonctionnement du Comité

.../...

40

du secrétariat et des commissions spécialisées sont inscrits chaque année au budget du Ministère des Mines et de l'Energie.

(2) Le Secrétaire est le gestionnaire délégué de ces crédits.

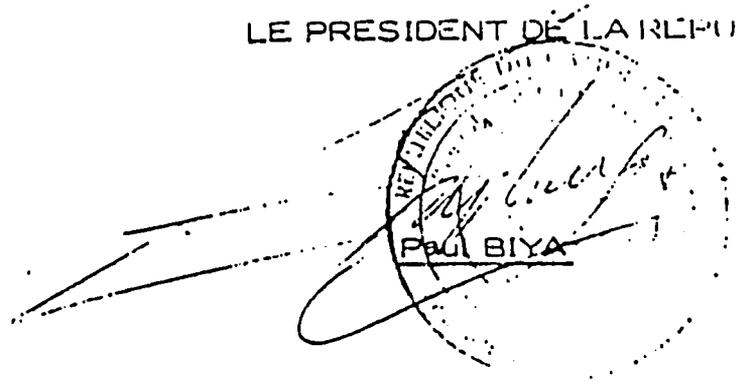
ARTICLE 9.- (1) Les fonctions de président, de secrétaire ou de membre du Comité sont gratuites.

(2) Toutefois, les frais de transport, et de séjour des membres ou des experts invités à l'occasion des réunions ou des missions qui leur sont confiées, sont à la charge du Comité.

ARTICLE 10.- Le Ministre des Mines et de l'Energie est chargé de l'exécution du présent décret qui sera enregistré, puis publié au Journal Officiel en français et en anglais.-

YAOUNDE, le 30 MAI 1985

LE PRESIDENT DE LA REPUBLIQUE



A

MINUTES OF THE INAUGURAL MEETING OF THE
NATIONAL WATER COMMITTEE HELD ON FRIDAY
THE 4TH OF OCTOBER 1985.

The meeting started at 9.45 a.m under the chairmanship of His Excellency Kima Tabong Micheal. Minister of Mines and Power, in person.

In attendance were all members amongst whom:-

- The Minister of Mines and Power: Chairman of the Committee.
- The Director of Water and Power in the Ministry of Mines and Power Mr. Agborsangaya Johnson: Secretary.
- The Director of Mines and Geology of the same Ministry represented by the Sub-Director of Geology Mr. Sona BETAH.
- The Director of Projects and Programmation in the Ministry of Regional Development Mr. DOH Sama Finlay.
- The Director of Rural Engineering in the Ministry of Agriculture Mr. MBEPI Henri.
- The Director of Livestock and Animal Breeding Mr. Agbor *Agbor*
- The Director of Community Development Mr. SHANG *Simon*
- The Chief of Service of Regional Development represented by Mr. TUTUWAN Enil.
- The Director of Meteorology in the Ministry of Transports represented by Provincial Chief of Service of Transports, for the Central South Province; Mr. CNDOUA Etienne Guillaume
- The Director Lands in the Ministry of Housing and Town Planning Mr. ABOGO NKOMO.
- The Director of the Hydrogeological Research Centre represented by Assistant; Mr BOUM Jean Pierre

19

- The General Manager of the National Electricity Corporation (SONEL) in person.
- The General Manager of the National Water Corporation represented by his Assistant, Mr. KEMAYOU Claude;
- A representative of the Ministry of Territorial Administration in the person of Mr. Marcel Etienne MANDENG NKEN.
- A representative of the Ministry of Livestock and Animal Breeding in the person of Mr. NGUECHENG Samuel.
- , Dr. TEKE Chief of Service of Projects in the Ministry of Mines and Power Yaounde.
- The Director of Preventive Medicine in the Ministry of Health, Dr. KESSENG MEBEN
- The Acting Secretary General of the Ministry of Mines and Power as an observer.

After apologising for the lateness, the chairman took the floor to deliver his inaugural speech; After underlining the importance of water as expedient for all life and nation development, he outlined the objectives of the Committee as one created to ensure the execution of law NO. 84/013 of 1984 to ensure rational utilisation of water resources and protection against depletion and pollution.

He called on members to take up their responsibilities immediately and fully, since water constitutes a major preoccupation of the Country at this moment and a *sine qua non* condition for the health-for-all in the year 2000 objective to succeed.

These responsibilities include amongst others:

- The drawing up of a Master Plan for water Distribution to Towns and Villages;
- To look into the problem of water sanitation:
- To put some order in the organisational structure of the water activities in the

50

- To propose a comprehensive training mechanism which would put at the disposal of our Country the necessary talented indigenous work force.
- To make an inventory of Underground Water resources to help in the orientation of homo-economic settlements grouping;
- To work towards the direction of seeking means aimed at reducing water expenditure of the population.

He declared that time has come for reflection to be made on water standards. After reminding them that their task was therefore not an easy one he enjoined and encouraged them to get to work without delay.

He then declared the Committee operational.

The speech finished, the chairman declared the floor open for general discussions. He disclosed that the meeting had no preconceived programme and pointed out that the member's contributions were to make out the programme in keeping with the democratic nature of our society.

The Director of Rural Engineering in the Ministry of Agriculture remarked that the Director of the Ports Authority ought to have been appointed a member.

The chairman observed that the decree provides for personalities to be invited to join the Committee whenever necessary.

The Director of Land in the Ministry of Housing and Town Planning asked for an introduction of the members present at the meeting given its inaugural nature. The Secretary Mr. Agborsangaya read out the list of members in the decree creating the Committee and introduced the other members present.

After this introduction it was noted that every appointed member was either present or represented.

- 4 -

The Director of Community Development Mr. SHANG suggested that every member should write out a reflection note to be examined at another meeting to be organised.

The Chairman supported holding that use would be made of the presentation note before members.

The Director of Projects at the Ministry of Territorial Development, Mr. DOM Finlay Sama felt the Director of PLanning in his Ministry ought to have been a statutory member.

The acting Secretary General of the Ministry of Mines and Power Mr. Bienvenu Fouda supported the calls for the enlargement of statutory members to include the Director in charge of Industries, and that of the Ports Authority given the nature of their activities and pointing out that including them in the decree obliges them more.

The Secretary declared that proposals sent to the Presidency had a larger list and consultation meetings had been held about the membership problems during which it had been held that the Committee should be limited to ensure effective participation.

The Chairman supporting, called the attention of the members to the differences between Committees, Conferences and Commissions. He agreed that many experts have been left out but will be called up when necessary.

The Director of Animal Breeding Mr. Agborbesong maintained that the Committee could include the experts as Ex-officio members without necessarily amending the decree.

The Secretary declared that the decree provides for ad Hoc Committees which could include them.

The Sub-Director of Geology, Mr. Sona Betah wanted to know whether it was the Bureau of the Committee or it's Secretariat to draw up the regulations.

The Secretary responded by reminding that the Committee is only of advisory nature and revealed that decrees will be

the Committee for discussion.

The chairman held Mr. Betah's question relevant and after reminding the audience of the high powered nature of the Committee observed that this meeting would indicate the direction to be taken.

The Director of Lands called upon the meeting to bring out a plan of action within the activities of the Committee as defined by the decree creating it and suggested the meeting should be held for specific objectives. He expressed his belief that the creation of a permanent bureau or specialised Sub-Committees for specific problems was not necessary as the secretariats could act as the permanent bureau.

The chairman pointed out the inaugural nature of the meeting which would orientate other meetings through suggestions contributed. He invited the Director to put in interesting proposals in writing.

The Director of Rural Engineering in the ministry of Agriculture declared that though much has been done, in the water sector, even more has to be done. He suggested that the permanent Committee should concern itself with and underline its first task as that of clarifying its attributions as far as water activities are concerned. He went on to propose that the Committee suggest reforms for all Ministries; study all texts concerned with water and make an inventory of these texts after which specialised Committees grouping the Sub-Sections concerned with water problems would deliberate on them and bring up suggestions. About the permanent Secretariat, he felt this was necessary given the importance of the Committee's task.

The chairman remarked that in his Ministry there exist a Department of water and Power whose responsibilities ought not be taken by the Committee. He called for members concerned with water activities to bring up ideas. He declared that the main problem in water activities was the presence of many organisations and services who entered into play without

any Coordination resulting in conflicts and waste.

Mr. Shang referred members back to the decree and reminded them that it did not impute on the attributions of the Ministry. He underlined the advisory nature of the Committee

The Director of Animal Breeding Mr. Agborbesong backed the earlier proposal for members to forward written suggestions to drafts to the Secretary, called for resources to be pooled together and for ideas from the Committee to solve any problems.

Mr. Betah called upon the members to look back to what prompted the creation of the Committee as the texts may not contain this. He complained that work has been done in the water sector without coordination so that foreign assistance was not channelled correctly. He felt the Committee assists in the coordination of activities in the water sector to bring water to the Population. The Department of Water and Power is not expected to dictate what ought to be done since it is only incidental and not necessarily consequential that the organisation of the Committee fell within the Ministry of Mines and Power.

The Director of Preventive Medicine disagreeing maintained that the Committee cannot advance if its activities are not based on the activities of the Department of Water and Power. He felt that this Department ought to simply present its texts and program for application. As for the tendency in the presentation note to the creation of specialised committees he maintained this was not in conformity with the text. He expressed his expectation that these specialised committees be organised by the above Department with all the sections in the various Ministries concerned with the water sector after which their programmes are submitted to the committee. He reminded the audience of paragraphs A and B of Article 2 of the decree.

The chairman pointed out that the Director's note was of presentation and not a programme of work. He disclosed that there is no programme of work yet and hope during the next meeting a programme of work will be drawn up.

91

The Secretary added and insisted that the notes were for reflexion and pointed out that his department makes only draft laws, He announced that study meetings were organised regrouping various sectors and Ministries to study them.

The Hydrogeological Research centre's chief expressed his organization's gratifications for the creation of a committee and proposed that a water seminar should be organised where every section of the water sector contributes through reports of its activities, retrospective and prospective.

Mr. Tutuman felt that the committee was created to advice on the modalities of application of the 1984 water law by bringing together all proposals from the section, sub-sections and organizations concerned, with the view of fomulating a global policy. He reported that the Service of Planning and Projects of his Ministry have already drawn up maps on water projects and called on other sections to come up with such contributions bring up ideas on the modalities of application of the law and texts. He went on to call attention to the fact that since water is to much of an important natural resources to be used in isolation, other laws like the clean Air Act of other Countries, should be created to act as corollaries of the water law.

The chairman thanking him stressed the importance of the committee and its elastic nature. He called for proposals in coordinated manner and reminded that all laws go to the Ministerial council to take on the stamp of Coordination. Suggestions were then called up to determine the time period for the reflection notes to come in.

Mr. Doh suggested two weeks, Mr. Agborbissong thirty days and Mr. Shang suggested the Committee has a formal session in November.

The Secretary General Mr. Fouda revealed that it has been noticed that the more time is given the less action is taken. Calling for the Iron to be heated while hot he suggested very

limited time.

The chairman decided on two weeks and enjoined the audience to study the ample material before them and act. He announced the next meeting would take place within a month and as soon as possible. He reminded that a committee is an organisation which takes up matters fast and told the audience for their frank sincere and cordial contributions and disclosed the government had felt the necessity for such a Committee long before. He enjoined their Ministries, sections or organisation's interest only.

He reminded them that task constituted a challenge. He then declared deliberations closed at 11.10 a.m; Light refreshments crowned the meeting.

SECRETARY

SECRETARY

NATIONAL WATER COMMITTEE.

DRACUNCULIASIS SURVEILLANCE

FORM TO BE FILLED OUT
BY THE CHIEF OF THE SDMPR

A) GENERAL GEOGRAPHICAL INFORMATION

- PROVINCE _____
- DIVISION _____
- MONTH / YEAR _____
- NUMBER OF REGISTERED CASES
DURING THE LAST FIVE YEARS _____

B) HABITS AND CUSTOMS

1-a) Nature of the source of drinking water most often used by the Population.

- Well
.....
- Spring
.....
- River or
Stream
.....
- Lake
.....
- Public Tap
.....
- Other (Please Specify) _____

b) Is it useable throughout the year ?

- YES
.....
- NO
.....

5) Among the identified cases, what practices make them frequently come in contact with water ?

- Laundering
.....
- Drinking Water
Collection
.....
- Bathing
.....
- Tending Domestic
Animals
.....
- Work
.....
.....

6) How do ill persons receive treatment ?

- Traditional Healer
.....
- Dispensary
.....
- Hospital
.....
- Other (Please Specify) _____

7) Have you used some kind of dracunculiasis in your division ?

- YES
.....
- NO
.....

...../.....

92

8) If yes, What control measure(s) have you used ?

- Treatment of Water Sources
- Treatment of Patients
- Health Education
- Environmental Modification

9) Name of Affected Area	Year Begun	Nature of Measure Used

10) What is the local name for this disease ? _____

DATE :
 PLACE :
 SIGNATURE :

92

REPUBLIQUE DU CAMEROUN
 MINISTERE DE LA SANTE PUBLIQUE

ANNEE... 1985
 MOIS DE... Novembre

PROVINCE DE... l'Adamaoua

SECTION DEPARTEMENTALE DE LA
 MEDECINE PREVENTIVE ET RURALE
 DE... Mbere (D. 2000-91)

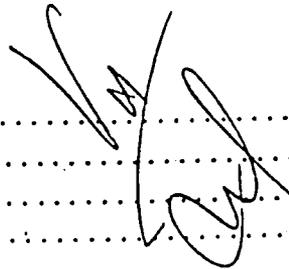
FICHE STATISTIQUE MENSUELLE
 DE SURVEILLANCE EPIDEMIOLOGIQUE-OCEAC

I - NOTIFICATIONS PERIODIQUES
 DES MALADIES TRANSMISSIBLES

- Nombre de formations sanitaires existantes dans le département
- Nombre de fiches mensuelles d'activités de Santé Publique et tableau de morbidité-mortalité attendues de ces formations sanitaires
- Nombre de fiches mensuelles d'activités reçues de ces formations sanitaires

Mois actuel	Total depuis le 1er janvier	Total année précédente
12	XXXXXXXXXXXX	12
24	264	288
20	-	-

OBSERVATIONS :



II - ACTIVITES DE DEPISTAGE

2.1.- Consultations

Consultants nouveaux

Consultations

Mois actuel	Total depuis le 1er janvier	Total année précédente
3 588	38 123	
8 945	91 428	

2.2.- Examens systématiques

2.2.1.- Equipe de prospection Médicale

- population examinée.....
- population recensée des zones prospectées.....

2.2.2.- Equipe d'intervention épidémiologique.....

- population examinée.....

2.2.3. - Autres équipes (PMI, Hygiène scolaire etc.)

- population examinée.....

Mois actuel	Total depuis le 1er janvier	Total année précédente
	232	232

OBSERVATIONS :

.....
 R. A. S

III - ACTIVITES DE PREVENTION

VACCINATIONS	Dans le cadre du P.E.V.	campagne de masse et intervention épidémiologique	Total mois actuel	Total depuis le 1er janvier	Total année précédente
- Anti amariles.....					
- Anti rougeoleuses	39	413	452	560	
- Anti cholériques					
- B.C.G.....	58	600	688	757	
- Anti tétaniques seules*	53		63	201	
- Anti poliomyélitiques*	237	501	738	802	
- DTCOQ*	237	501	738	802	
- Anti rabiques.....					
- Anti-méningococciques.....					
- Autre (à préciser)					

* Vaccinations complètes effectuées.

(1)

C - TETANOS :
 Total des cas observés 0 dont cas de tétanos néonatal 0
 Total des décès 0 dont décès dus au tétanos néonatal 0

OBSERVATIONS
 R - A - S

D - MENINGITE CEREBROSPINALE : Total des cas observés 0 Total de décès 0
 - Nombre de suspects ayant fait l'objet d'un examen bactériologique du LCR 0
 - Présence de méningocoque dans le LCR : 0

Traitement spécifique utilisé :
 Nombre de malades traités : Nombre de malades décédés
 Malades décédés avant le début du traitement Malades décédés après le début du traitement

OBSERVATIONS :
 R - A - S

E/TRYPANOSOMIASE : (Synthèse de la Fiche spéciale).

N ^{os}	RUBRIQUES	Mois actuel	Total depuis le 1er janvier	Total année précédente
1	Trypanosomés pris en compte au dernier jour du mois précédent	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
NOUVEAUX MALADES PRIS EN COMPTE :				
2	- confirmés parasitologiquement (T+) dont LCR altéré	.....	.....	.....
3	- suspects immunologiques (To, sérologie+++) dont LCR altéré	.....	.....	.....
4	- suspects cliniques (To, sérologie=0, LCR altéré)	.....	.....	.....
5	Total de nouveaux malades pris en compte (2+3+4)	.....	.....	.....
6	Nouveaux malades décédés au cours du traitement (rayés des comptes)	.....	.....	.....
ANCIENS MALADES CONTROLES dont				
7	- déclarés guéris (rayés des comptes)	.....	.....	.....
8	- déclarés décédés (-"- -"- -"-)	.....	.....	.....
9	- déclarés disparus (-"- -"- -"-)	.....	.....	.....
10	Total des rayés des comptes (6+7+8+9)	.....	.....	.....
11	- mis en observation sans traitement (EOST)	.....	.....	.....
12	- échec au traitement à l'Arsobal	.....	.....	.....
13	- rechute et reprise en traitement	.....	.....	.....
14	Trypanosomés restant en compte au dernier jour du mois en cours (1+5-10)	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
15	Nombre de prélèvements effectués pour examen sérologique	.....	.....	.....
16	Nouveaux malades déclarés NT par équipes mobiles	.....	.....	.....
17	Anciens malades AT contrôlés par équipes mobiles	.....	.....	.....
18	Nombre de sujets protégés (chimio prophylaxie)	.....	.....	.....
19	Nouveaux trypanosomés NT dépistés 6 mois après la lomidinisation	.....	.....	.....
20	Nombre de malades	.....	.....	.....

OBSERVATIONS :
 R - A - S

F/MALADIES A TRANSMISSION SEXUELLE ET TREPONEMATOSES

	Hommes	Femmes	Total
1. Urétrites ou vaginites aiguës ou chroniques avec présence de gonocoques :	54	115	169
2. Autres urétrites	18	24	42
- à Trichomonas	.....	.....	.....
- à Candida Albicans	.....	.....	.....
- à Staphylocoques	.....	.....	.....
- à Streptocoques	.....	.....	.....
- à Autres germes (à préciser)	.....	.....	.....
3. Total des cas de syphilis vénériennes dépistés	4	1	5
- dont avec lésions cliniques précoces	4	1	5
- dont syphilis congénitale	.....	.....	.....
- dont dépistage uniquement sérologique	.....	.....	.....
4. Total des cas de pian dépistés :	.....	.....	.....
- dont avec lésions cliniques contagieuses	.....	.....	.....
5. Autres maladies vénériennes (à préciser)	.....	.....	.....
6. Nombre de contacts traités	.....	.....	.....

OBSERVATIONS :

.....

 R. A. S

G – SCHISTOSOMIASE

1. Schistosomiase intestinale : Cas observés... 24 Total des décès... 0

Zones prospectées :

..... Zone rurale

2. Schistosomiase urinaire : Cas observés... 0 Total des décès... 0

Zones prospectées :

3. Schistosomiase intercalatum : Cas observés... 0 Total des décès... 0

Zones prospectées :

92

H - ONCHOCERCOSE : Cas observés 10 (mentionner les zones prospectées, le taux de porteurs de kystes, de lésions oculaires et de cécité) :

Zone du Centre de Santé Rive de Batrea Godole

I - FILARIOSES :

1. Filariose Bancroft : Cas observés /

2. Filariose Loa-Loa : Cas observés 3

3. Zones prospectées :

J - TRACHOME (donner la distribution des cas selon le stade clinique, le nombre de trichiasis traités, etc)

.....
.....
.....

K-LEPRE (Synthèse de la Fiche Spéciale)

1991 01/01 - 1

		Mois Actuel	Total depuis le 1er janvier	Total Année précédente
1	- Malades en compte au 1er jour du mois	21.0	XXXXXXXXXXXX	XXXXXXXXXXXX
	dont AT	6.9	XXXXXXXXXXXX	XXXXXXXXXXXX
	dont IT	15.1	XXXXXXXXXXXX	XXXXXXXXXXXX
	dont IST	9.0		
	Malades pris en compte dans le mois			
2	- Total de nouveaux lépreux dépistés .....	.....	.....	.....
	dont formes lépromateuses .....	.....	.....	.....
	dont formes infantiles .....	.....	.....	.....
	dont formes infantiles lépromateuses .....	.....	.....	.....
	dont porteurs d'invalidités .....	.....	.....	.....
3	- Malades immigrés, retrouvés .....	.....	.....	.....
4	- Total des malades pris en compte (1+2+3)	21.0	.....	.....
5	- Total des malades contrôlés .....	.....	.....	.....
6	- Malades libérés des contrôles (déclarés guéris) .....	.....	.....	.....
7	- Malades rayés des comptes (émigrés, disparus, décédés) .....	.....	.....	.....
8	- Total des malades libérés et rayés (6+7) .....	.....	.....	.....
9	- Total des malades restants en compte au dernier jour du mois (4-8)	21.0	.....	.....
10	- Total des malades traités dans le mois	21.0	XXXXXXXXXXXX	XXXXXXXXXXXX
	- au moins une fois .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
	- présents à plus de 50 % des séances de traitement .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX /
	- en circuits de traitement .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
	- en auto-traitement .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
	- malades en momothérapie (un seul médicament) .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
	- malade en bithérapie (deux médicaments) .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
	- malade en trithérapie (trois médicaments) .....	.....	XXXXXXXXXXXX	XXXXXXXXXXXX
11	- Nombre de bacilloscopies effectuées pour dépistage de nouveau malades .....	.....	.....	.....
12	- dont bacilloscopies positives (BH+) .....	.....	.....	.....
13	- Nombre de bacilloscopies effectuées pour le contrôle d'anciens malades en traitement .....	.....	.....	.....
14	- dont bacilloscopies toujours positives (BH+) .....	.....	.....	.....

OBSERVATION : (traitements appliqués, réactions lépreuses

..... Dans manque de médicaments et de moyens de
 localisation pour recenser et traiter les malades
 du département.

100

L - TUBERCULOSE

		Mois Actuel	Total depuis le 1er janvier	Total Année précédente
1	- Malades en compte au 1er jour du mois	19.	xxxxxxxxx	xxxxxxxxx
	Malades pris en compte dans le mois :			
2	- nouveaux tuberculeux pulmonaires dépistés (BK+)	0	.....	.....
3	- malades guéris et rechutés	0	.....	.....
4	- malades immigrés et retrouvés	0	.....	.....
5	- Total des malades pris en compte dans le mois : (2+3+4)	19	.....	.....
	Malades rayés des comptes dans le mois :			
6	- Emigrés .....	.....	.....	.....
7	- disparus .....	.....	.....	.....
8	- Décédés .....	.....	.....	.....
9	- Guéris .....	.....	.....	.....
10	- Total des malades rayés des comptes dans le mois (6+7+8+9) .....	.....	.....	.....
	Malades restants en compte le dernier jour du mois :			
11	- Actifs en traitement régulier	19	.....	.....
12	- Actifs en traitement irrégulier .....	.....	.....	.....
13	- Chroniques .....	.....	.....	.....
14	- Total des malades restants en compte le dernier jour du mois (11+12+13) .....	.....	.....	.....
	Examens bactériologiques effectués dans le mois :			
15	- Total des examens effectués pour le dépistage des nouveaux tuberculeux .....	.....	.....	.....
16	- dont examens positifs (BK+) .....	.....	.....	.....
17	- Total des examens effectués pour les contrôles des anciens tuberculeux en traitement	2	.....	.....
18	- dont examens positifs (toujours BK+) .....	.....	.....	.....

NOUVEAUX MALADES PRIS, EN COMPTE SELON L'AGE ET LE SEXE

	SEXE	1-4 ans	5-9 ans	10-14 ans	15-19 ans	20-39 ans	40-50 ans	50 et +	Total
Malades neufs BK*	Hommes								
	Femmes								
Malades guéris et rechutés	Hommes								
	Femmes								

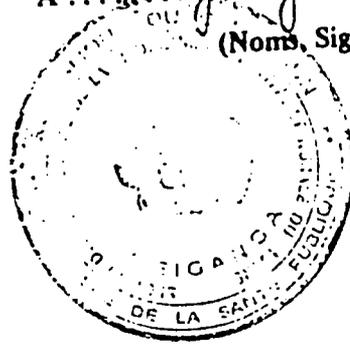
TABLEAU RECAPITULATIF DES MALADIES TRANSMISSIBLES OBSERVEES

Liste C.I.M (OMS)	MALADIES	Classement par âge des cas observés								Total		Total depuis le 1er janvier	
		moins 0 1 an		1 à 4 ans		5 à 14 ans		15 ans et plus		Mois actuel			
		cas	Décès	cas	Décès	cas	Décès	cas	Décès	cas	Décès	cas	Décès
001	CHOLERA.....												
006	AMIBIASE.....	1	0	1	0	5	0	11	0	19	0	85	6
009	MALADIES DIARRHEIQUES GRAVES.....	29	0	25	1	39	0	67	0	150	1	2252	4
011	TUBERCULOSE PULMONAIRE												
030	LEPRE.....												
032	DIPHTERIE.....												
033	COQUELUCHE.....			2	0					2	0	11	1
036-0	MENINGITE CEREBROS PINALE.....												
771-3	TETANOS DU NOUVEAU-NE			xxxx	xxxx	xxxx	xxxx	xxxx	xxxx			1	1
037	TETANOS (Autres).....												
045	POLIOMYELITE AIGUE.....											1	0
057-9	MALADIES ERUP. VARIOLI- FORME.....												
052	VARICELLE.....											9	0
055	ROUGEOLE.....					4	0			4	0	8	0
060	FIEVRE JAUNE.....												
070	HEPATITE VIRALE (ictère fébrile).....												
071	RAGE (humaine).....												
076	TRACHOME.....												
084	PALUDISME.....	96	0	113	0	114	0	250	0	505	0	2420	0
085	LEISHMANIOSE.....												
086-5	TRYPANOSOMIASE H AFRICAINNE.....												
090/097	SYPHILIS (toutes formes)							5	0	5	0	350	0
098-4	OPHTALMIE GONO. du Nouveau-né.....	11	0	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	11	0	58	0
098-0a8	Urétrites gonococciques					21	0	133	0	154	0	2497	0
	Autres urétrites												
	- à Trichomonas												
	- à Candida Albicans												
	- à Staphylocoques												
	à Streptocoques												
	- à Autres germes (à préciser)												
099	Autres maladies vénériennes	1	0			10	0	41	0	42	0	117	0
102	PIAN.....												
120-0	SCHIISTOSOMIASE (Urin ou vésicale).....											87	0
121-1	SCHIISTOSOMIASE Intestinale					4	0	20	0	24	0	681	0
125-0	FILARIOSE à Wuchéréria Bancroft.....											25	0

125-2	FILARIOSE & LOA LOA							3	0	12	0
125-3	ONCHOCERCOSE							10	0	10	0
125-7	DRACUNCULOSE										
126	ANKYLOSTOMIASE										
127/129	Autres helmintiases intestinales	10	0	47	0	95	0	180	0	332	0
020	PESTE										
022	CHARBON										
002	FIEVRES TYPHOIDES										

A ... *Meiganga* ... le .. 27 DEC. 1985 ..

(Noms, Signature et Cachet)



[Handwritten signature]

Jean-Denis Alloungoum
Infamias Diplômé d'Etat

ANNEX 5

PROTOCOL I: PREVALENCE SURVEYS AND FAMILIAL CLUSTERING OF DRACUNCULIASIS IN
THE MANDARA MOUNTAINS

INTRODUCTION

Persons living in Mandara mountain communities acquire dracunculiasis from consumption of contaminated water obtained from what have been termed "traditional wells." These scarce wells are used by numerous family units, and often by different villages. Accordingly, the risk of infection should be spread evenly throughout the population partaking of these water sources.

However, during the rainy season, when transmission of dracunculiasis occurs, other, more transient, water sources become available to the population. These may be closer than the traditional wells and thus more convenient locations for the fetching of household water supplies. It is possible that these sites, rather than the traditional well source, serve as loci for transmission of dracunculiasis. If so, each temporary source is likely to be used by a lesser number of households compared to the traditional well serving the area. Infections may then occur in clusters, with certain households having greater risk of infection than others. That is, risk will be related more to use of local sources than to the use of the traditional well. Even without detailed water usage information, clustering by household would imply traditional wells are not the only source of infection.

HYPOTHESIS

The transmission of dracunculiasis in the Mandara Mountains occurs in and around the traditional wells of the region. Since these traditional wells serve as water source for a large number of family units, risk of infection among these units should be similar. No epidemiological evidence of clustering by household should be evident.

IMPLICATION

Intermediate host control methods (cyclospicides) applied to only traditional well sources should be sufficient to control transmission of dracunculiasis. Authorities need not be overly concerned with identification and treatment of other potential water source transmission sites. Alteration of behavioral habits (through health education) is less critical.

METHODS

1. A region of the endemic area of the Mandara mountains will be selected for study based on historical evidence of dracunculiasis occurrence during the rainy season of 1985. In order to determine this, preliminary reconnaissance will be carried out by questioning local chiefs using pictures, a recent events calendar pertaining to the region, and local names for dracunculiasis.

- a. Two villages should be chosen to be included in the overall pilot control project (PROTOCOL 2). These should be accessible to medical authorities in Mora who will be carrying out these studies.

b. Populations should number between 200-400 with an estimated prevalence of dracunculus infection of 15-30%. The population should have access to not more than two traditional wells as defined by Professor Ripert's study. No pumps, boreholes, or other sources of protected water should be present within a radius of 1.5 kilometers.

c. The areas to be studied should be permanently settled, with a stable population. The population should express interest in having the investigators control dracunculiasis in their area.

2. Once selected, the two communities will be mapped schematically. The number and type of water sources in the area will be noted on the map.

3. A house-to-house survey will be undertaken, with all households in the village being visited. Attempts should be made to have as many people present in the household as possible during the survey.

4. Questions in the household survey will be addressed to the adults of the household, and usually directly to the designated head of the household. Wives will be referred to when necessary. Translators must be used who are familiar with the local terminology for dracunculiasis and who have also been familiarized with the nature of the questions being asked before the survey begins.

a. Family members who regularly live in another village must not be included. Questions must be applied to all members of the household, with parents answering for young children.

b. Each household will be assigned a unique number on the data collection form. After completion of the form the survey team will move on to the next household unit in the sampling scheme.

c. These same villages will be questioned repeatedly in the pilot control study, Protocol 2.

d. The questionnaires to be used are a slightly modified version of a questionnaire used previously in a successful cluster survey performed in Uganda.

5. Statistical analysis will be performed to determine if different households hold different risk ratios for dracunculiasis.

QUESTIONNAIRE INSTRUCTIONS

(Column)

1. Person number (begin new numbers for each household) _____ (1-2)

2. Age estimation _____ (3)

0-4--(A) 5-9--(B) 10-14--(C) 15-19--(D)

20-39--(E) >39--(F)

3. Sex _____ (4)

1 = Male 2=Female

4. Do you have guinea worm now? Show me the worms or the active ulcerations. (Record number of active worms. If none, write 0 in the box.)

_____ (5)

5. Have you had any worms emerge during the preceding 12 months? How many? (Mark number, 00=no infection)

____ (6-7)

6. Have you ever had guinea worm in your life? _____ (8)

N = No Y =yes

mk

7. Where do you get your drinking water in the dry season?

(Codes must be developed for the village(s) in question)

Least used water source	_____	(9)
Middle used water source	_____	(10)
Most used water source	_____	(11)

8. Where do you get your drinking water in the wet season?

(Codes must be developed for the village(s) in question)

Least used water source	_____	(12)
Middle used water source	_____	(13)
Most used water source	_____	(14)

9. Record household number _____ (15-17)

10. Record TOTAL NUMBER of people REPORTED to live in house. ____ (18-19)

11. Record whether person was actually interviewed and examined.

Y=seen N=not seen _____ (20)

12. Village code _____ (21)

13. Person Code _____
(22-25)

1

PROTOCOL 2: EFFECT OF TEMEPHOS TREATMENT OF DRINKING WATER IN AN
ENDEMIC AREA FOR DRACUNCULIASIS IN NORTHERN CAMEROON

INTRODUCTION

Operational research pertaining to the control of dracunculiasis has not been undertaken as yet in Cameroon. Given the remote conditions of many of the known endemic areas, the sparsity of probable transmission sites, and the logistical difficulties of providing such areas with protected water sources, an appropriate and practical control measure would be intermediate host control. Temephos (ABATE™) is the agent of choice when treating potable water sources for reduction of Cyclops populations. However, if a control program using this approach is to be considered, early operational research must be undertaken to evaluate the cost and efficacy of Cyclops control in this ecological setting. Study results can be used to evaluate the effectiveness of this single control modality in the peculiar conditions of this region.

OBJECTIVE

To measure any reduction of dracunculiasis prevalence and related indices attributable to the addition of temephos to drinking water sources.

METHODS

1. The epidemiological data to be collected in this effort will be principally retrospective, that is, based on history of infection compatible with dracunculiasis. Although data will be collected on actual cases of emerging worms noted during the surveys, a history of an illness compatible with guinea worm disease will be accepted as a "case."
2. Villages used will be those selected for Protocol 1. One village will be designated as a control village and will have no intervention measures applied. Another village with similar dracunculiasis prevalence, but with totally separate water sources from the control village, will be selected as the intervention village. The water source in this village will receive monthly treatments of temephos (1 part per million) for four months in 1986: July, August, September, and October. Through interview/survey methods described in Protocol 1, incidence determinations for the 1985 transmission season will be determined in July 1986.
 - a. Surveys asking the same questions will be repeated for these same households in October 1986 and October 1987 in order to ascertain transmission incidence of the seasons 1986 and 1987.
 - b. Additional questions may be added during later surveys to address new and pertinent operational research questions.
3. Use of temephos: The temephos formulation to be used will be ABATE™ 50% emulsifiable concentrate (EC) applied at 1 ppm. Dosage will be calculated each month based on dimensions and depth of the individual

water source to be treated. This preparation of Abate has been safely and effectively used by the Indian Guinea Worm Eradication Programme. Description of application methods and safe handling precautions are attached (Annex 6). The applications will be applied personally by Dr. Kollo Basile, PMO, Mora. Careful records of dosages applied will be kept, and symptoms of anticholinesterase toxicity among villagers will be noted.

4. Measurements of Cyclops populations are difficult and often are not a reliable indication of the absence of the intermediate host in a water body. Nevertheless, their identification is important, yet so far this has not been attempted in this region of Cameroon. Accordingly, cyclops will be measured qualitatively in both the study villages, using a plankton net. Monthly, all water bodies will be sampled by passing a 100 mesh net for ten minutes into the pond or well. Differentiation of Cyclops species from other organisms of similar size will be achieved by observation of their characteristic movement. Population levels will be gauged as 2+, 1+, and negative.
5. Data obtained will be analyzed in 1987 to determine impact of the applications.

N° 463 /MSP/DMPHP/BAMPH/SEP/..

FICHE PROGRAMME

ANNEE 1985 / 1986

1. PROGRAMME FOR THE SURVEILLANCE AND CONTROL

OF DRACUNCULIASIS

2. OBJECTIVES FOR THE YEAR 1985 / 1986

1. To update knowledge of the distribution and prevalence of dracunculiasis in Cameroon;
2. To evaluate the control efforts in the EXTREME NORTH Province Mayo Sava Division;
3. To estimate the potential reduction of dracunculiasis prevalence from other sources (i.e. water and housing development projects);
4. To create a file on worldwide activities aimed at dracunculiasis control and eradication.

3. ACTIVITIES OF THE PREVIOUS YEAR; 1984 / 1985

1. The beginning of a program to eliminate the disease in North Cameroon based on treatment of water sources and health education through the help of Prof. Ripert of the University of Bordeaux II in France;

2. The distribution of a questionnaire to the ADAMAOUA, NORTH and EXTREME - NORTH Provinces;
3. Contact was made between the Epidemiology and Malaria Service and the desk officer from CDC in Atlanta assigned to monitor dracunculiasis in Cameroon;
4. A representative was sent to the Nigerian National Conference on Dracunculiasis at Ilorin, Nigeria (March 25 - 27, 1985).

IV. ACTIVITIES ENVISAGED FOR 1985 / 1986.

1. A mission to the EXTREME NORTH Province to see the effect of the ongoing program;
2. The identification of areas where the disease has been identified through the redistribution of a questionnaire (begun in 1984);
3. The creation of a national map showing areas where cases have been identified;
4. In areas where cases have been identified, determine transmission sites if any through missions to the affected areas (ex: Limbe

V. LOCATION OF DIFFERENT OPERATIONS

MISSIONS :- EXTREME NORTH, Mayo Sava Division (Mora)

- Limbe (Cassava Farm)
- Others to be determined (possibly Edea)

VI , VII. DATES AND SERVICES INVOLVED

The program for this fiscal year will begin on September 1, 1984 and end on June 15, 1985. The program will be under the supervision of Mrs Deborah Agbor-Tabi, Epidemiologist in the Epidemiology and Malaria Service, Direction of Preventive Medicine.

VIII. CALENDAR OF OPERATIONS

- September - Redistribution of the questionnaire
- October - Contact made with international bodies
(CDC in Atlanta, University of Bordeaux in France)
- November - Mission to Limbe
- December - (Other missions) + *send out reminders & questionnaires*
- January - Mission to the EXTREME NORTH
- March-June - Analysis of Results of questionnaire and update of dracontiasis map.

IX. FINANCING OF THE PROGRAM

An estimate of the cost of the program in the EXTREME NORTH in 1984 was given as 7 467 500 francs cfa (Ref No. CES / L / MSP / SDSF NRA.). Estimates for other parts of Cameroon and sources of funding have not yet been established. However the known costs for 1985 / 1986 are :

Office Materials	100 000 frs
Missions :	
Transportation Maroua	87,000
Per diem for 2 days (Cat. II - 10,000/day).....	<u>20,000</u>
	107 000 frs
Fuel Limbe 60 liters	10,740
Per diem for 2 days	20,000
(Cat. II - 10,000 / day)	
Per diem for 2 days (Cat III (driver) 7000/day)	<u>14,000</u>
	<u>44 740 frs</u>
	251 740 frs

COST IN EXTREME NORTH

7 467 500

11 SEPT. 1985

Dokrohafo Tasi

7 719 240

MINISTERE DE LA MEDECINE PREVENTIVE
ET DE L'HYGIENE PUBLIQUE

PROVINCIALE DE LA MEDECINE
PREVENTIVE ET DE L'HYGIENE PUBLIQUE
EXTREME-NORD -

DEPARTEMENTALE DE LA MEDECINE
PREVENTIVE ET RURALE DU MAYO-SAVA

Situation dracunculose
(ver de guinée dans le
Mayo-Sava)-

174/L/HSP/SDH/MS/MRA

Le Médecin-Chef
de la Section Départementale
de Médecine Préventive et
Rurale du Mayo-Sava,
Chef de service Dé-
partemental de la Santé Pu-
blique du Mayo-Sava Par
Intérim.

à
Monsieur le Ministre de la
Santé Publique,

J'ai l'honneur de porter à votre connaissance
qu'à travers les prospections effectuées par la Section Départe-
mentale de Médecine Préventive et Rurale du MAYO-SAVA, trois (3)
affections revêtent une importance particulière en Santé Publique
et nécessiteraient une étude plus approfondie.

Il s'agit par ordre de priorité décroissante:

- 1) ver de guinée
- 2) les bilharzioses(urinaireset intestinales)
- 3)les filariose-

Celle qui mérite une attention particulière dans l'immédiat, c'est
le ver de guinée.

Si nous avons retardé de répondre aux différentes
correspondances venant du niveau central, c'est parce que nous
voulions cerner un peu plus en détail ce problème qui intéressait
déjà, en plus du Ministère de la Santé, le FONADER par le biais
de son antenne FSAR de MAROUA et le Professeur RIPERT de l'Univer-
sité de Bordeaux II en FRANCE.

Dans un premier temps, nous avons réussi à
recenser les différents trous d'eau responsable de la transmission
du ver de guinée dans le Département. Cela nous a pris 17 jours. Et
les résultats sont les suivants:

nombre des trous d'eau infestés =87

nombre des barrages contenant de l'eau =2

Une première phase de traitement de trous d'eau a été déjà faite
grâce au produit ABAT500 fourni par le P fesseur RIPERT. Selon
le protocole de traitement fourni par le Professeur RIPERT, il fal-
lait le faire une fois par mois, quatre(4) mois de suite par en
pendant deux(2) ans.

Par ailleurs, le Professeur RIPERT avait promis verbalement lors de son passage à Mora, de toucher Monsieur le Ministre de la Santé Publique pour une dotation en carburant pour ce projet. Je lui avais également suggéré qu'il fallait prévoir une indemnisation des sujets impliqués dans ce projet. Ces propositions sont demeurées sans résultat jusqu'à ce jour.

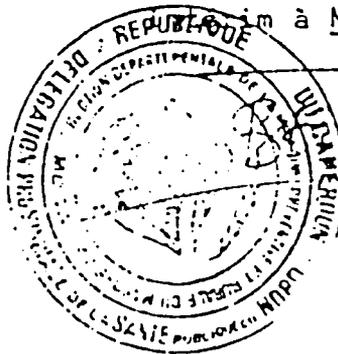
J'avais à l'époque soumis, par le biais du Chef de service Départemental de la Santé Publique du Mayo-Sava, au FSAR (antenne de Maroua) qui s'intéressait au projet, et sur sa demande, le coût estimatif du projet ~~est~~^{dont} vous trouverez ci-joint une copie.

Connaissant le vif intérêt que vous portez à ce sujet et que nous partageons, nous nous mettons à votre disposition pour sa continuation.

Mora, le 7 Juin 1984

-Dr. KOLLO Basile -

- Médecin-Chef de la S.D.M.P.R. du Mayo-Sava,
 Chef de service Départemental de la Santé Publique du Mayo-Sava à par
 im à MORA



COUT ESTIMATIF

I. Durée: Comme nous l'avons souligné plus haut, le recensement a nécessité 17 jours.

Il nous faudra à peu près le même nombre de jours pour les opérations d'assainissement. Or l'assainissement complet nécessite 4 séries de traitement à raison de 1 série par mois. D'où la durée totale du projet:

Recensement	17 jours
Traitement	17 x 4 = 68 jours
TOTAL.....	85 jours

II Personnel: le nombre total de personnes incluses dans le projet est de 10(dix), et se répartit comme suit:

- 1/ Dr. KUEGOUA Daniel, Chef de service Départemental de la Santé Publique du Mayo-Sava, Coordinateur du projet,
- 2/ Dr. KOLLO Basile, Chef de la Section Départementale de la Médecine Préventive et Rurale; Directeur des opérations sur le terrain,
- 3/ YACOUBOU Aoudou, Agent technique du Génie Sanit.
- 4/ DJIBRINE Hessana, Chef de service d'Hygiène Urb. de Mora,
- 5/ MADJE Michel, Chef de service d'Hygiène Urbaine de Tokombéré,
- 6/ ABBA, Agent d'Hygiène,
- 7/ IBRAHIM, Agent d'Hygiène
- 8/ MADI Ibram, Chauffeur,
- 9/10/ 2 Guides.

En nous référant au décret n°82/418 du 13.9.82 réglementant le régime des déplacements des fonctionnaires et Agents de l'Etat, la répartition du personnel peut se faire de la manière suivante:

Catégorie II	2
Catégorie III	6
Catégorie IV	2
Ainsi on a:	

Cat.	Nombre de personnes	Taux journal.	Nombre de jours	TOTAL
II	2	10.000	85	11.700.000
III	6	7.000	65	13.570.000
IV	2	4.000	85	11.360.000
Total	10		85	36.630.000

--- 3 ----

III CARBURANT: pour la première phase (recensement), nous avons utilisé 500 litres d'essence, prélevé sur la dotation de la Section Départementale de la Médecine Préventive et Rurale du Mayo-Sava. Il nous faudra probablement la même quantité d'essence pour les phases ultérieures.

Ainsi on a :

Recensement.....	500 L
Traitement.....	4x500= 2.000L.
Total.....	2.500 Litres

Prix Unitaires..... 175

Prix Total..... 175x2.500= 437.500F

IV ENTRETIEN VEHICULE: Il s'agit d'une Land-Rover ~~Robson~~ de la Préfecture de Mora, temporairement alloué au service de la Médecine Préventive dans le cadre du projet.

V RECAPITULATIE:

Personnel.....	6. 630. 000
Carburant.....	437. 500
ENTRETIEN VEHICULE....	<u>400. 000</u>
	7. 467. 500

POUR COPIE CERTIFIEE CONFORME

Mora, le 07 Juin 1984
 Médecin-Chef de la Section Départementale de la Médecine Préventive et Rurale du Mayo-Sava,

Chef de service Départemental de la Santé Publique du Mayo-Sava par Intérim.

P. K. Kuvellé
 DOCTEUR K. K. KUVELLE
 MEDECIN CHEF DE LA S.D.M.P.P.
 DU MAYO-SAVA

MINISTRE DE LA SANTE PUBLIQUE

 DIRECTION DE LA MEDECINE PREVENTIVE
 ET DE L'HYGIENE PUBLIQUE

 SECTION PROVINCIALE DE LA MEDECINE
 PREVENTIVE ET DE L'HYGIENE PUBLIQUE
 DE L'EXTREME-NORD

 SECTION DEPARTEMENTALE DE LA MEDECINE
 PREVENTIVE ET RURALE DU MAYO-SAVA

REPUBLIQUE DU CAMEROUN
 Paix - Travail - Patrie

MSP - DM HP
 Service d'Epidémiologie
 et du Paludisme
 Arrivée No 1168
 du 20 AOUT 1984
 Sortie le _____ S/ No _____
 Classement _____

117 16 / MSP / DM PHP / SPM PHPEN / SDMPR / MRA.

REPUBLIQUE UNIE DU CAMEROUN	
SECTION PROVINCIALE DE LA MEDECINE PREVENTIVE ET DE L'HYGIENE PUBLIQUE DU NORD	
GAROUA	
Date	<u>7/08/84</u>
Classe sous le no	<u>711</u>
Sorti le	_____

Médecin-Chef de la Section Départementale de la Médecine Préventive Rurale du MAYO-SAVA à - MORA -

A

Monsieur le Ministre de la Santé Publique à YAOUNDE-

S/C Délégué Provincial de l'Extrême Nord à - GAROUA -

Objet: Surveillance de la dracunculose dans le MAYO-SAVA.

J'ai l'honneur de porter à votre connaissance. Suite à votre lettre N°D31/L/MSP/DM PHP du 21/07/84, les éléments d'appréciation ci-après

1) La dracunculose est considérée ici comme une maladie apportée par les premières pluies

2) Les villageois des secteurs concernés pensent que cette affection ne peut pas être traitée à l'Hôpital mais plutôt par des moyens et méthodes traditionnelles comme l'extraction avec une buche d'allumette et l'application des feuilles d'hibiscus

(1) //

3°) Par conséquent les quelques rares cas enregistrés dans les CSD ne représentaient même pas le millième des chiffres réels puisque pendant les premiers mois de début de saison pluvieuse (Juin-Juillet) plus de la moitié des habitants des villages concernés sont atteints et ne viennent à l'Hôpital (CSD) que les complications.

(2) //

4°) De plus la période d'infectation (de Juin à Juillet) correspond également à la période de complications intenses, dès que l'immobilisation est passée,

(3) //

(4) //

(5)

117

- 2 -

sujets vont cultiver leur champs de mil ou de coton et non à l'Hôpital.

5°) Ce qui est important à ~~mon~~ connaître à mon humble avis c'est le chiffre de la population intéressée par cette affection; est estimée à l'heure actuelle à cinquante mille habitants environ. Ce qui correspond en gros aux cantons de:

§ OULDEME → dans l'Arrondissement de TOKOMBE

- MEME	!	
- MOUKTELE	!	et dans
- MORA-MASSIL	!	l'Arrondissement de
- BALDAMA	!	
- OUDJILA	!	
- PODOKO-CENTRE	!	MORA
- PODOKO-NORD	!	

§ KOLOFATA → dans l'Arrondissement de KOLOFATA

6°) Ci-joint une cartographie partielle des trous d'eau infestés déjà recensés.

Moy le 30 Juillet 1984.



DOCTEUR KOLLO BASILE
MEDECIN CHEF DE LA S.O.M.P.R.
DU MAYO-SAVA

113

REPORT OF MISSION

As notified in Note de Service No D112/MSF/DMPHF/DAMFHP/SEP/2 of 16 October, 1985, a mission was carried out in Limbe by Mrs. Deborah Agbor-Tabi and Mr. Ndo Ondole Thomas, both of the Epidemiology and Malaria Service, Directorate of Preventive Medicine.

PURPOSE: To investigate dracunculiasis (Guinea Worm) cases reported in Limbe.

1. INTRODUCTION

With the beginning of the International Drinking Water Supply and Sanitation Decade, there has been an increased interest in the surveillance of dracunculiasis. In Cameroon surveillance began with a questionnaire in 1981 requesting statistics on the prevalence of Dracunculus medinensis around the country. One set of responses to this questionnaire was forwarded to the Ministry by the Provincial Delegate of the South West Province. These responses showed eight cases over a three year period reported from the Provincial Hospital Bota Annex in Limbe.

Since the disease has only been known to be endemic in the Extreme North Province (especially Mayo Sava and Mayo Tsanaga Divisions) and the fact that often fewer than 10% of the cases in any endemic area would report to the health centers or hospitals, it was decided that an investigation of these cases was necessary to determine if the area was an unknown endemic focus of the disease.

11. INVESTIGATION

On Thursday, 24 October, 1985 at 9:00 a.m. the investigators left Yaounde and arrived in Limbe at 1:30 p.m. Our objectives were :

- to find out if any more cases had been reported since 1981;
- to find out where else cases have been diagnosed (i.e. other health institutions that did not report in 1981);
- to investigate water sources as possible transmission site ;
- to interview cases to try to determine where they became infected.

At the CINF in Limbe, we discovered that the Chief of the SDMPR, Dr. Lyonga was in Yaounde on official business. Therefore, his assistant, Mrs. Mbandi recieved us. After a brief discussion wherein Mrs. Mbandi confided that she did not know of any recently reported cases, a search of the statistics was made. No cases were found. However, she recommended that in order to be certain that no cases had been reported we should also check at the Statistic Office of the Provincial Delegation in Buea and the Provincial Hospital Bota Annex in Limbe. Since the offices close at 2:30 pm, we now had to wait until the day.

The next morning, (Friday October 25th) we began with a statistic search in Buea. In this way we hoped to discover any cases reported at other health centres and Hospitals around Limbe and perhaps in other parts of the Province.

We met with the Provincial Delegate of Health, Dr. Kwankam, the Assistant Delegate of Health and the Chief of Health Statistics. Again we told them the purpose of our mission and asked to begin with the annual reports to look for reported cases in the divisions in and since 1981 we were asked to return the next day to discuss and pick up this information.

At the Bota Annex, the Bursar showed us to the statistician, Sister Fokum, G.S. and the pediatrician in charge, Dr. Mrs Elizabeth Tchwenko. They both confirmed having seen a recent case and a quick look through the records showed: on OCTOBER 21, 1985, Rachael Chenyi, 2½ years, from New Town Quarter with worm in buttocks. The doctor and the nurse both recalled having seen several cases during the year. However, since the registers were quite voluminous we asked them to forward to us in Yaounde all cases since 1981.

Because the Bota Annex is mainly a pediatric and obstetrics center we decided to visit the Main Provincial Hospital building. Unfortunately, upon our arrival the statistician had just stepped out so the General Supervisor Sister Ida Willems made an appointment for us on Saturday.

We next visited the Mayor's Office to ask for a map of the city and met the Assistant to the Mayor. None were available to give to us, however, we were able to draw a rough map from the map on the wall of the Mayor's office (see map attached). After locating the cases on the map, the Assistant Mayor told us of a possible water source nearby where people took water when the piped source was turned off.

It was now 2:30 and no more office visits were possible so we decided to investigate the water source the Assistant Mayor spoke of. We found it to be a fast flowing stream and people were washing clothes in it as we drove up.

On Saturday, October 26th, we returned to the Provincial Delegation in Euea. No other cases had been reported but the statistician pointed out that on the forms used before 1982 the disease was not listed. Therefore, we could not expect to see any reports before 1983 and the information would need to come from each health center's or hospital's registry.

We next returned to the Provincial Hospital in Limbe and met the statistician, Sister Maina. We described the information needed but she could not recall any cases. Again since this information would only be found in the doctor's registers she asked for some time to reply and said she would send the results to Yaounde.

Finally we tried to contact the officials of the PMI because it was located in the quarter where the cases originated. Unfortunately, by the time we were able to get a guide and find the place the head nurse was gone for the day and only emergency staff remained.

III. DISCUSSION

In summary, we were able to find out that there were more cases diagnosed in the area and recently. Although we were not able to verify the cases diagnosis from Bota Annex in other places, it is still a possibility. We were also able to note from the map that almost all of the cases came from the same side of town.

We noted that there were many possible sources of information which because of our time limit we were not able to explore. For example, there were two private clinics in the area and there are records at the CDC plantations of surveys that were done on the workers. Also because of our limited time we were not able to see a case and thereby verify the diagnosis.

Our inability to verify the diagnosis in one way or another and the fact that there were several children before 1981 who were under one year of age puts some doubt on its validity. However, Dr. Tchwenko seems to have had some previous experience with the disease and had even worked out a specific treatment without hospitalization of patients (i.e. killing the worm without extraction).

In conclusion another trip to Limbe is warranted for :

- a) more follow-up of specific cases
- b) a third party to verify the diagnosis
(either someone in Limbe or from the Central Administration)
- c) to carry out a survey of how many other cases exist who do not go to the health center and to find out how long it has existed in the community.

Finally, based upon the above information the measures that can be taken to prevent the spread of this disease can be decided upon.

YAOUNDE, THE


Deborah Agbor-Tabi

Chief of Mission.

CASES OF GUINIA ORN PROVINCIAL HOSPITAL ANNEX BOTA

=====

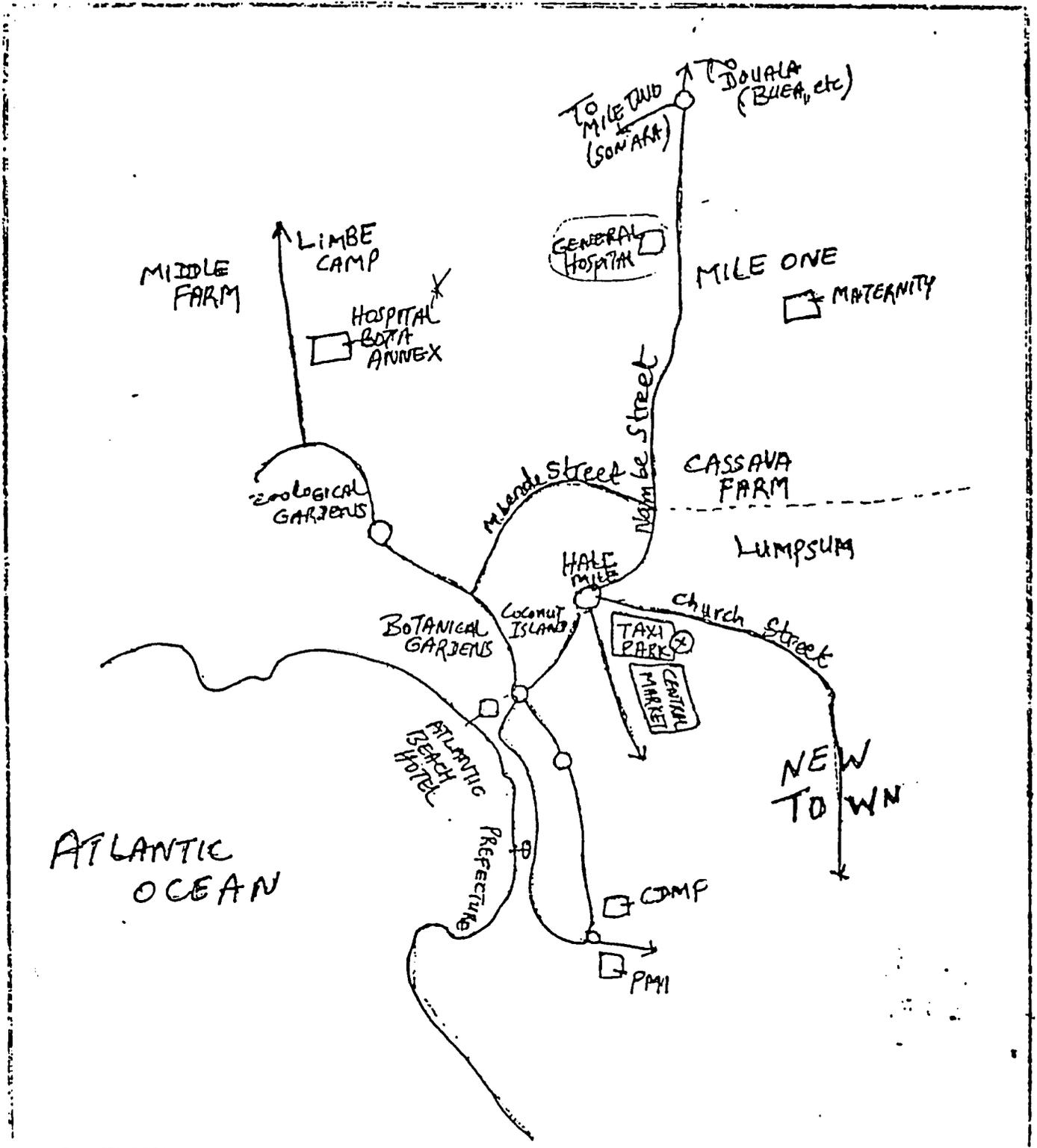
ANNEX I

NO.	SEX	AGE	ADDRESS	DATE
1.	Male	5 Months	Church St. Victoria	26/4/79
2.	Female	5 "	Cassava Farm, VA.	13/12/79
3.	Female	7 "	Lumpsum Quarter, Victoria.	22/01/80
4.	Female	1 $\frac{4}{6}$ Year	Middle Farm, VA.	29/08/80
5.	Male	3 Months	Mbende Street, Victoria.	13/10/80
6.	Male	1 $\frac{5}{6}$	Church Street, VA.	06/07/81
7.	Female	7 Years.	Mile one Victoria	11/09/81
8.	Female	1 $\frac{5}{12}$ year.	Cassava Farm, VA.	23/11/81

ANNEX II

QUARTERS IN THE CENTER OF LIMBE TOWN

Oct '35



⊗ Water Source Investigated.

NOTE : Cases found on Church and Mbonde Streets, in Cassava Farm, Mile one, Lumpsum and Middle Farm Quarters.

ANNEX 6

MINISTERE DE LA SANTE PUBLIQUE

MINISTRY OF PUBLIC HEALTH

Hôpital Provinciale Annexe de Bota
PMB 73 - VICTORIA LIMBE

Provincial Hospital, Bota Annex
PMB 73 - VICTORIA LIMBE

DEPARTEMENT DE FAKO
PROVINCE DE SUD-OUEST

FAKO DIVISION
SOUTH WEST PROVINCE



Telephone : 19933/19933a RT: 76

Our Ref Y// MOB/A.1.51/115

Your Ref

Objet/Subject 25 NOV 1985
..... No 1083

Bota, Victoria the/le 28th October, 19

From MEDICAL ADVISER:
Provincial Hospital, Limbe
& Bota Annex.

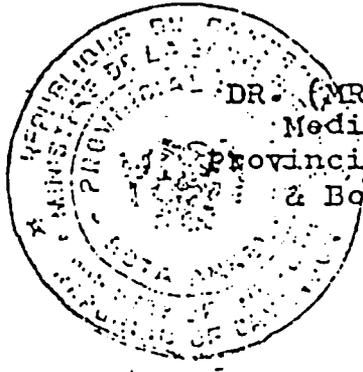
Ministry of Public Health
EPIDEMIOLOGY & MALARIA
YAOUNDE.

République	du Cameroun
Ministère de la Santé Publique	
Arrivée le	21 NOV 1985
Enregistre	G-2182-B
Sortie le	23 NOV 1985
Classe le	

*JMP HP
no 4 plitakoni
22-11-85
A*

Attached are Cases of Dracunculosis in children
from November, 1981 to October, 1985, for your further
action.

*Mme Agben
28/11/85
A*



DR. (MRS) E. TCHENKO,
Medical Adviser,
Provincial Hospital Limbe
& Bota Annex.

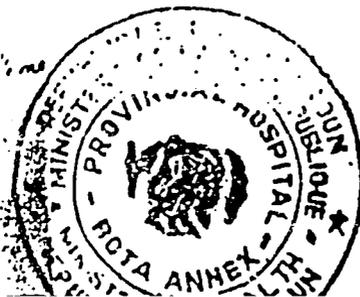
28 NOV 1985

2079

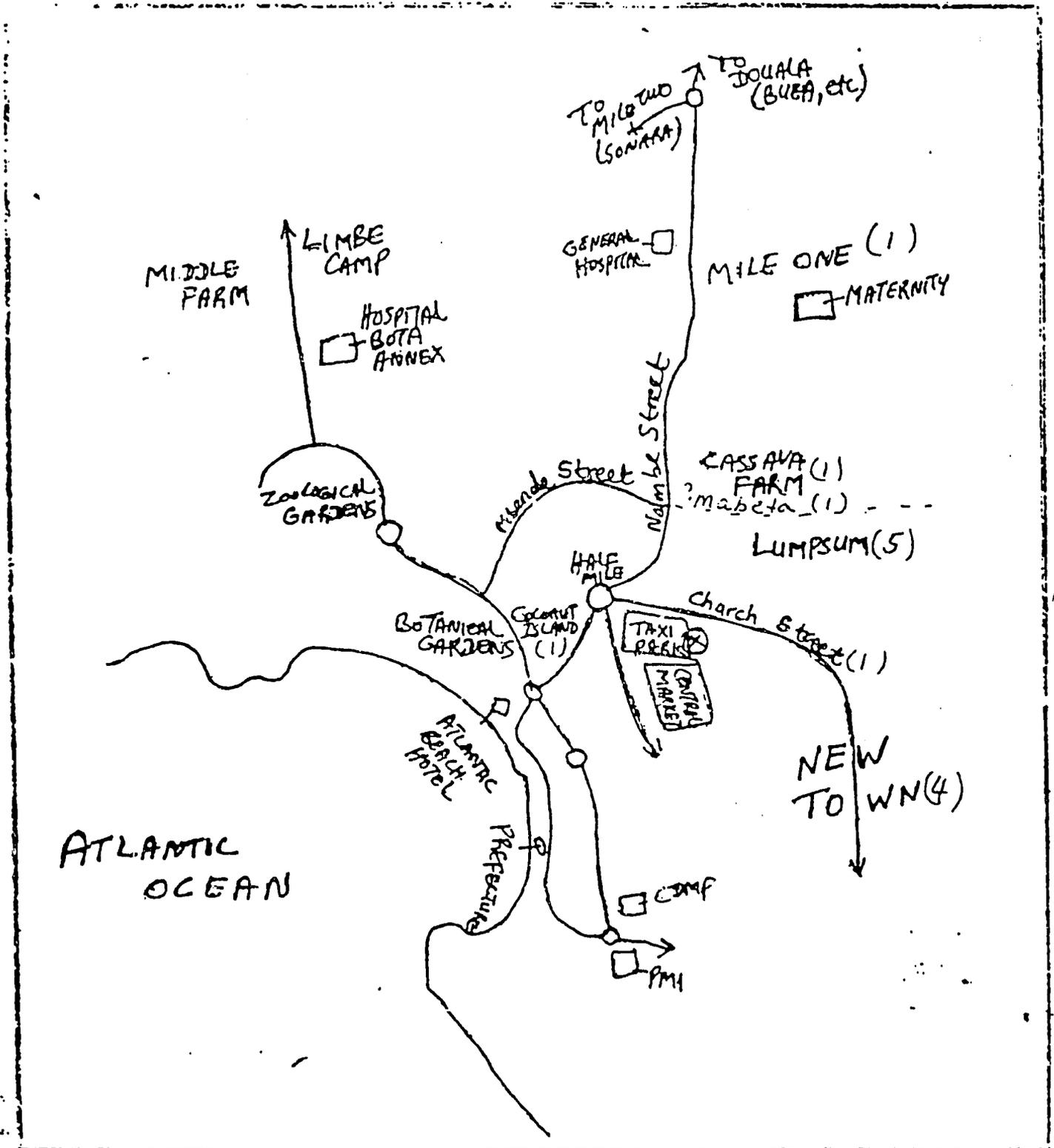
PROVINCIAL HOSPITAL BIRTH REGISTER - LIMBE

DATE	NAME OF PATIENT	SEX	AGE	NAME OF PARENT	ADDRESS
17-11-1981	Bertrand Ekeme	M	1yr.7mths	Maria Ekeme	T i k o
23-11-1981	Hilda Fonzif	F	1yr.5mths	Magdalene Fonzif	Cassava Farm, Limbe
08-02-1982	Arrey Tataw	M	1yr.	Anasthasia Tataw	Lumpsum qrts, Limbe
16-06-1982	Elvis Ngwana	M	10mths	Rose Ngwana	Lumpsum Quart, Limbe
05-07-1982	Archibald Ebonta	M	3 yrs.	Jonas Ebonta	New Town, Limbe
17-08-1982	Aseh Stephen	M	1 yr 3mths	Rebecca Aseh	New Town, Limbe
03-09-1982	Arrey Tataw	M	1 7mths	Anasthasia Tataw	Lumpsum qrts, Limbe
06-09-1982	Elvis Ngwana	M	2yrs 1mth	Rose Ngwana	Lumpsum qrts, Limbe
06-09-1982	Kenneth Aboh	M	2yrs	Grace Aboh	Lumpsum qrts, Limbe
16-09-1982	Solange Abunaw	F	1yrs 3mths	Dorothy Abunaw	New Town, Limbe
18-08-1983	Jacquelline Mbah	F	8yrs	Agnes Mbah	Gardens, Limbe
09-09-1983	Emmanuel Mukete	M	1yr 11mths	Emilia Mkwanyuo	Church Street, Limbe
14-11-1983	Gilda Ehang	F	1yr 8mths	Elizabeth Ehang	Mabeta New Layout, Limbe
18-12-83	Denis Asah	M	2yrs 6mths	Eunice Asah	Coconut Isi
28-01-1984	Chinyoro Bokemu	F	2yrs 6mths	Irene Bokema	Mboma (Fishing Port)
23-07-1984	Attia Bernadette	F	2yrs 10mths	Justine Attia	Nurse's qrts
15-07-1984	Ngono Bertrand	M	2yrs 3mths	Noumbissi Marie	Mile 1
17-07-1985	Keng Ndifor	F	1yr 11mths	Evelyn Ndifor	Mutengene
11-09-1985	Nne Nguti	F	2yrs 9mths	Christiana Akere	Mile 4 (Donadikombo)
21-10-1985	Rachael Chonyi	F	2yrs 3mths	Helen Chonyi	New Town, Limbe

1 - 10mths - 7yrs
 No - 23, 5mths (1yr 11mths)
 7 = 26-03-1985
 Ed = 17.92



QUARTERS IN THE CENTER OF LIMBE TOWN



⊗ Water Source Investigated.

NOTE : Cases found on Church and Mbende Streets, in Cassava Farm, Mile one, Lumpsum and Middle Farm Quarters.

(4) = No. of cases giving this address

Photographs from Mayo Sava

Following page:

- Front: Upper--A village in the Mandara Mountains. Each collection of huts is occupied by one family unit. Note terracing of hills. Cultivation is extremely labor intensive.
- Lower--A traditional well, the site of dracunculiasis acquisition in the mountain transmission ecology.
- Back: Upper--Copepods (Cyclops species) are the intermediate hosts for the parasite. They are just visible as tiny white spots in this sampling jar.
- Lower--A typical, uncomplicated GW lesion. The blister has ruptured, leaving an open ulcer. These commonly become secondarily infected.

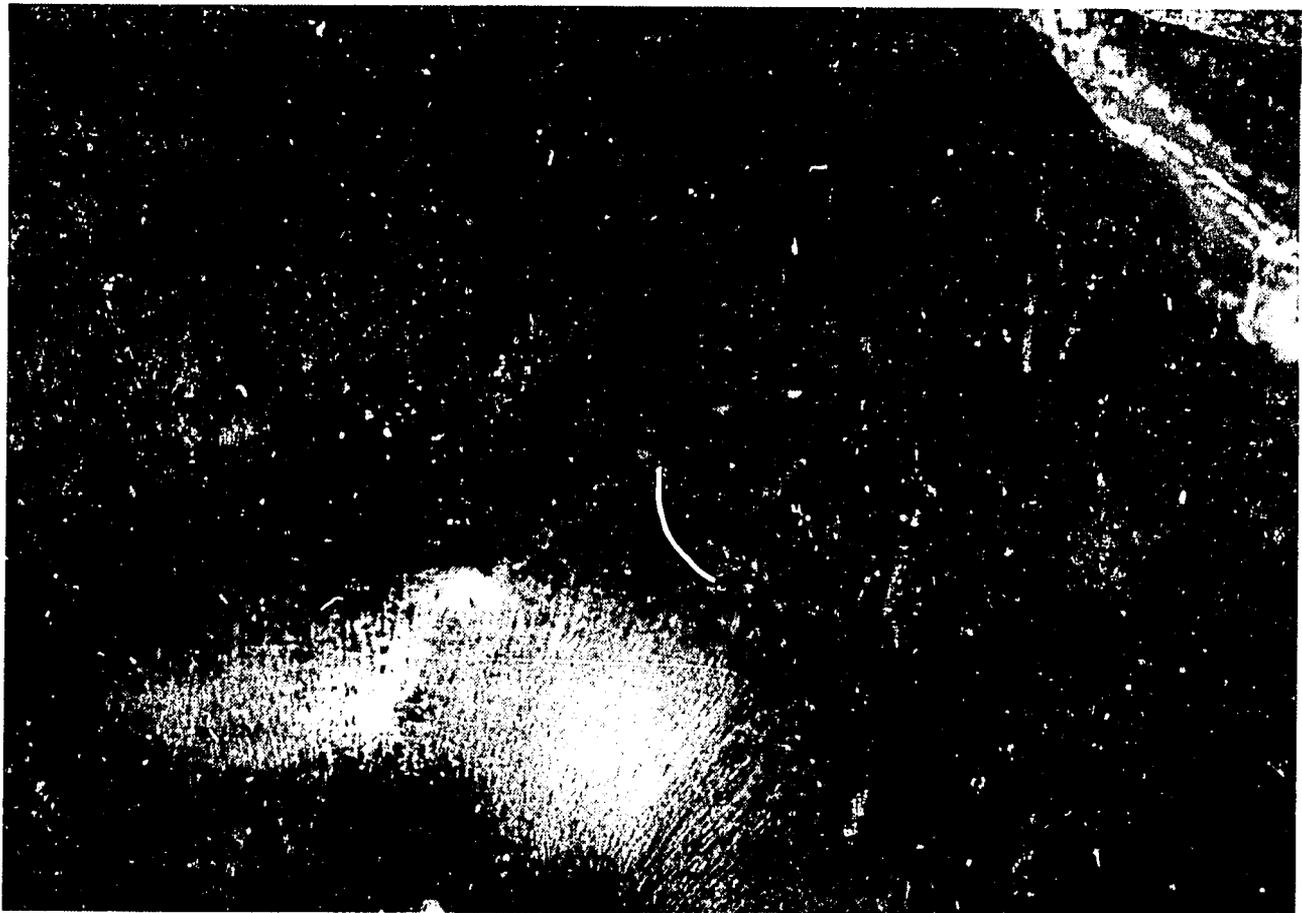




Photographs from Mayo Sava

Following page:

- Front: Upper and Lower--The subcutaneous female worms are sometimes observed in unusual locations. Here, worms are seen under the skin of the abdomen and breast.
- Back: Upper and Lower--Secondary bacterial infection of GW lesions can intensify and prolong disability. They may also put the patient at risk for systemic illness, such as tetanus.





REFERENCES

- Abdou AH. Proposed WHO/AFRO program for control of dracunculiasis in the African region. In: Schultz, M. (ed.) Workshop on Opportunities for Control of Dracunculiasis. Washington, D.C.:National Academy Press, 1985, pp 103.
- CARE/Cameroon/Mokolo. Monthly Activity Reports 1982-86.
- Division of Helminthology, National Institute of Communicable Diseases. Notes on the application of temephos 50%EC under the Guinea Worm Eradication Programme. Delhi, India.
- Encyclopaedia Britannica, 15th Edition. 1984. Chicago:Encyclopedia Britiannica, Inc., Press. pp 694-701.
- Fontaine R. Dracunculiasis in Uganda, 1983, and its relationship to planned safe water projects. Consultant Report to UNICEF, Uganda. 1983.
- Isley RB and Martin JF. The village health committee. WHO Chronicle 1977; 31:307-315.
- Issoufa H, Monekosso G, Ripert C. Epidemiologic study of dracunculosis in the Podokwos of the Mandara mountains (Northern Cameroon) Bull Soc Path Exot 1979;72:135-144.
- Mafiamba PC. Division of Preventive Medicine and Public Hygiene: 1982 Annual Report of Activities. URC Government Press, 1984.
- Ministry of Economy and Plan. 5th Plan Quinquennal de Developpement Economique, Social, et Culturel, 1981-86. 4 November, 1981.
- Mott KE, Kesseng M, Wanji RN, Atanga SN, Mafiamba, PC, and Quincke G. A proposal for a national plan of action for schistosomiasis control in the United Republic of Cameroon, 1983.
- Ripert C, Samay Ekobo A, Enyong P, Palmer D. Evaluation des repercussions sur les endemies parasitaires (malaria, bilharzirose, onchorcercose, dracunculose) de la construction de 57 barrages dans les Monts Mandara. Bull Soc Path Exot 1979; 72:324-339.
- Roche B. These: Projet de lutte contre la dracunculose dans la region Centre Nord des Mounts Mandara. University of Bordeaux II, Unites d'enseignement et de recherche des sciences medicales, No. 483, 20 December, 1984.
- Struba RJ and Isley RB. The choice of health status indicators to evaluate water and sanitation projects in North Cameroon: A synthesis of available information. WASH Technical Report No. 5. October, 1981.
- Tomaro J. and Heilman E. Formulation of the CARE multi-year plan for water supply and sanitation in Cameroon. WASH Technical Report No. 75. March, 1983.

REFERENCES (cont.)

US Department of Agriculture, Soil Conservation Service, and Fond d'Aide et de Cooperation, France. Resource Inventory of North Cameroon. Washington, D.C.: U.S. Government Printing Office. 1978:pp 269-362.

Weniger BG. The control of Dracunculiasis in Togo during the Water Decade: Report of a WHO consultant mission. June 23, 1983.

World Health Organization. Dracunculiasis--Nigeria. Wkly Epidemiol Rec 1985; 60:263-66.