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THE CONTRIBUTION OF ORSTOM MEDICAL AND VETERINARY ENTOMOLOGISTS
(1949-1962) TO THE AFRICAN AND MALAGASY TOPICAL MAP

(Paper submitted by the French Government)

THE CONTRIBUTION OF ORSTOM MEDICAL AND VETERINARY ENTOMOLOGISTS
(1949-1962) TO THE AFRICAN AND MALAGASY TOPICAL MAP

In medical and veterinary entomology maps are used mainly to represent the geographic distribution of insects and acarids vectors of serious endemic or enzootic diseases. One of the first tasks requested of the research workers of the Office de la Recherche Scientifique et Technique Outre-Mer (Office for Scientific and Technical Research Overseas) was the compilation of maps of the distribution of the glossinae vectors of trypanosomiasis and the anopheles vectors of malaria, prepared with the symbols recommended by the inter-African Conference on the tsetse and trypanosomiasis (Brazzaville, February 1948) and by the Conference on Malaria in Equatorial Africa (Kampala, 1950; cf. WHO technical report No. 38, 1951). Thanks to inter-territorial scientific co-operation, these works have made it possible to compile comprehensive maps of vectors for Africa south of the Sahara by placing the maps of French entomologists alongside those of foreign entomologists. African epidemiology can learn much from a comparison of these maps with those indicating the distribution of diseases transmitted. More detailed regional maps were then compiled, together with maps of the distribution of other haematophagous arthropods: mosquitoes other than anopheles, sand flies and onchocerca, horse-flies (tabanidae), ticks (ixodidae), (cf. list of maps given in the appendix).

The compilation of each of these maps has necessitated numerous prospections at different seasons and of as many and as varied capture points as possible, followed by thousands of specific identifications of the arthropod, the chorology of which is studied. It takes several years before the network of information thus compiled is sufficiently complete and gives a precise idea of the distribution areas of each vector.

Usually, on one and the same map symbols are used to show collection points in the case of rare or localized species and conventional colours to show the area of extension of common species.

When numerous species are mentioned by their symbol on the same large-scale map, the map becomes difficult to interpret quickly and the distribution of the main vectors is not clearly shown. To obviate these difficulties, maps are compiled showing only a limited number of important species

represented by a sign, a tint or a conventional colour. In order to achieve standardization, the CCTA Conference of Lwiro (Congo, Leopoldville, 1957) recommended the compilation of degree squared distribution maps of the main arthropods and pathogenic molluscs (1 degree squared = approximately 11,000 km²). Up to four different species can be shown on each map. See the Map of West African glossinae by A. Rickenbach (1961) and the Map of anopheles vectors of Malaria in West Africa by A. Escudie and J. Hamon (1961).

So far the medical entomologists have not attempted to compile maps showing the density of the arthropod species they study. The density is indeed very difficult to evaluate and is subject to seasonal and annual variations which would mean that the maps would have to be brought up to date continuously. Modifications in the area of extension of a species can only be estimated by comparing precise distribution maps compiled at intervals of several years. They will make it possible to appreciate the results of control campaigns against the big vectors (anopheles, glossinae, sand flies, ticks, and so on).

Research work into medical and veterinary entomology in the field calls for the preliminary compilation of very detailed maps, topographical charts and aerial photographs which are essential to the carrying out of prospections and entomological prophylaxis campaigns. Their success depends, therefore, on close collaboration between geographers, topographers, cartographers and entomologists.

LIST OF THE PRINCIPAL DISTRIBUTION MAPS OF PATHOGENIC ARTHROPODS PUBLISHED BY THE ORSTOM MEDICAL AND VETERINARY ENTOMOLOGISTS IN AFRICA, MADAGASCAR and REUNION

1. West Africa

1:3,000,000

Limite des aires de distribution des glossina palpalis et techinofides; zones pluviométriques. (Boundary of distribution areas of glossinae palpales and tachiaidae pluviometric areas). 1 sheet. SG/AOF, 1949.

Limite des aires de distribution des glossina morsitans et loogipalpis; zones pluviométriques (Boundary of distribution areas of the glossina morsitans and loogipalpis; pluviometric areas). Ibid. 1949.

1:10,000,000

(in degrees squared) - Carte de répartition des anophèles vecteurs du paludisme en Afrique Occidentale, (Map showing the distribution of anopheles vectors of malaria in West Africa), by A. Escudie and J. Hamon, SG/Dakar, 1961. Published in Medécine tropicale: Le paludisme en Afrique Occidentale d'expression française (Malaria in French-speaking West Africa), 1961, 21, p.679.

1:10,000,000

(in degrees squared) - Carte de repartition des glossines en Afrique Occidentale d'expression française (Map showing the distribution of glossinae in French-speaking West Africa), by A. Rickenbach, 2 sheets. 1961, ORSTOM and Muraz Centre (Bobo-Dioulasso, Upper Volta).

1:2,000,000

Carte de répartition des anophèles en Afrique Occidentale, établie sous la direction de J. Hamon (Map showing the distribution of anopheles in West Africa, compiled under the supervision of J. Hamon), Service cart. ORSTOM, February 1957: 3 sheets.

Carte de la Casamance avec la répartition actuellement connue des anophèles

(Map of the Casamance River Region showing the current known distribution of anopheles) by J. Hamon, P. Deveny,

A. Rickenbach and G. Causse, ORSTOM and SGHMP d'AOF, published in: "Contribution a l'etude des moustiques de la Casamance, Ann.Parasit, hum.comp. 1956, 31, No. 5-6, p.609 (Contribution to the study of mosquitoes of the Casamance River region).

Carte de repartition des anopheles en Afrique occidentale (Haute-Volta)

(Map showing the distribution of anopheles in West Africa, Upper Volta by M. Holstein, J. Hamon and A. Rickenbach 1955, Serv. cart. ORSTOM. Published in the WHO Bulletin 1956; 15, p.552

Carte de repartition des simulies dans le bassin de la Bougouri-Ba en saison

seche (Map showing the distribution of simuliidae in the Bougouri-Ba basin in the dry season) by M. Ovazza, published in the Bull. IFAN 1958, 20, Ser.A., No. 2 p. 654. (Article by M. Blanc, F. d'Aubenton, M. Ovazza and M. Valade: Recherches sur la prophylaxie de l'onchocercose en AOF I. Etude hydrobiologique de la Bougouri-Ba et essais de désinsectisation)(Research into onchocercosis prophylaxis in French West Africa, I. Hydrobiological study of the Bougouri-Ba and attempts at deinsectization).

Carte de la region de Bobo-Dioulasso (Haute Volta)(Map of the Bobo-Dioulasso

Region (Upper Volta)) by M. Ovazza, A. Rickenbach and M. Valade, published in: Tabanides de la region de Bobo-Dioulasso (Haute-Volta) (Tabanidae of the Bobo-Dioulasso (Upper Volta) region): Bull.Soc.Path.exot. 1959, 52, No.5: p.680-681.

Carte de la Guinée (Map of Guinea) by M. Ovazza, J.P. Adam and H. Bailly-

Choumara, 1959, published in: Contribution a l'etude des Tabanides d'AOF III. Tabanides de Guinée (Contribution to the study of the Tabanidae of French West Africa, III. Tabanidae of Guinea). Bull.Soc.Path.exot. 52, No. 3: p.367.

Carte de la vallée de Yerpao (Dahomey) (Map of the Valley of Yerpao (Dahomey))

by G. Quelennec, published in: Essais de portéo de deux insecticides utilises contre les larves de Simulium damnosum dans le Nord Dahomey, (Extensive texts of two insecticides used against the larvae of the Simulium damnosum in North Dahomey)) WHO Bulletin, 1962, 27, No. 4-5, p.616.

Carte générale de la Côte-d'Ivoire (General Map of the Ivory Coast) by J.

Doucet, M. Ovazza and J.P. Adam, published in: Tabanides de Côte d'Ivoire, Ann.Parasit, Hum.comp. 1958 33, No. 3, p. 285. (Tabanidae of the Ivory Coast, Ann.Parasit. Hum.comp. 1958 33, No.3, p.285).

2. Cameroun

1:2,000,000

Carte des glossines du Cameroun (Map of glossinae of Cameroun) by J. Rageau (1949); 2nd edition by J. Rageau and J.P. Adam (1951), Serv.Cart. ORSTOM. Published in Rev.Elev.Med.Vet.Pays trop. 1953, 6, No. 2, p.76.

1:2,000,000

Carte des anophèles du Cameroun et notice correspondante (Map of anopheles of the Cameroun and relevant report) by J. Rageau and J.P. Adam, 1952, Serv.Cart. ORSTOM.

Carte de répartition des anophèles au Cameroun (Map showing the distribution of anopheles in Cameroun) revised by J.P. Adam in 1955. Serv.cart. ORSTOM. Published in the WHO Bulletin 1956, 15: p.553.

Répartition géographique et économique des anophèles au Cameroun: 8 cartes

en 2 planches (Geographic and economic distribution of anopheles in Cameroun: 8 two-sheet maps), by J. Mouchet et J. Gariou, published in the Bull. Soc.Path. exot. 1961, 54, No.1: p.107-108.

Carte des anophèles de la région Bamiléké (Ouest Cameroun) (Map of the anopheles of the Bamileke region (West Cameroun), by J. Mouchet et J. Gariou. Published in Recherches et études camerounaises 1960, 1: p.93.

Distribution géographique et écologique des Glossina palpalis RD et G. fuscipes fuscipes Newst. au Cameroun (Geographic and ecologic distribution of Glossinae palpales RD and G. fuscipes fuscipes Newst. in Cameroun), by J. Mouchet, J. Gariou and J. Rageau. Published in the Bull.Soc.Path.exot. 1959, 51 No. 4: p.653.

Carte de répartition des glossines du Logone et Chari (Map showing the distribution of glossinae of Logone and Chari) by J. Mouchet, A. Delas and P. Yvore, published in the Bull.Soc.Path.exot. 1961, 54, No. 4 p.876-877. (La campagne expérimentale de lutte contre Glossine tachinoïdes West. a Logone Birni, République du Cameroun et Rep. du Tchad) (Experimental control campaign against Glossinae tachinidae West. at Logone Birni, Republic of Cameroun and Republic of Chad).

Cartes de répartition des ixodidae au Cameroun No. 1, 2, 3 (Maps Nos. 1, 2 and 3 of the distribution of ixodidae in Cameroun) by P. C. Morel and J. Mouchet, published in the Ann.Parasit.hum.comp. 1958, 33, No. 1-2: p.76-100. (Les tiques du Cameroun: ixodidae et argasidae) (Ticks of Cameroun: ixodidae and argasidae).

Carte des zones de végétation au Cameroun (Map of vegetation areas in Cameroun) by P. Grenier, J. Mouchet, J. Rageau and J.P. Adam, 1960. Ser.cart. ORSTOM published in: Simulies de la République du Cameroun, Bull. Soc. Path. exot. 1961, 54, No. 5, p.1132. (Simulidae of the Republic of Cameroun, Bull. Soc. Path. exot. 1961, 54 No. 5, p.1132).

Carte des vecteurs du paludisme (Anopheles gambiae, A. Funestus, A. nili, A. moucheti) in 4 couleurs (Map of vectors of malaria (Anopheles gambiae, A. Funestus, A. nili, A. moucheti) in 4 colours by J. Mouchet, and J. Cariou. To appear in the Atlas of Cameroun.

Carte des glossines du Cameroun, en couleurs (Coloured Map of the glossinae of Cameroun) by J. Mouchet. Ibid.

3. Equatorial Africa

1:2,000,000 Carte de répartition des glossines en AEF, 3 feuilles en couleurs (Map showing the distribution of glossinae in French Equatorial Africa, 3 coloured sheets) by L. Maillot 1956, Serv.cart. ORSTOM.

1,100,000 Carte de répartition probable des sous-espèces et races de glossina palpalis, région de Brazzaville (Map showing the probable distribution of sub-species and races of glossina palpalis, Brazzaville area), by L. Maillot. 1 sheet, 1956, Serv. cart. ORSTOM.

Carte de répartition des anophèles en AEF (Map showing the distribution of anopheles in French Equatorial Africa) by A. Grjebine, 1956. Serv. cart. ORSTOM. Published in WHO Bulletin 1956, 15, p.554.

1:2,000,000 Carte de l'onchocercose humaine dans le sud de l'AEF (Map of human onchocercosis in southern French Equatorial Africa) by M. Ovazza. Serv. cart ORSTOM 1952, published in: Bull.Soc.Path.exot. 1953, 46, No.4: p.576. (L'onchocercose humaine et son aspect entomologique dans le sud de l'AEF - Human onchocercosis and its entomological aspect in southern French Equatorial Africa).

Cartes de répartition des tabanides d'AEF (Maps showing the distribution of tabanidae in French Equatorial Africa) by R. Taufflieb and P. Finelle. 17 maps published in the Bull. IEC, Brazzaville, 1956, No. 12: p.211-240.

4. Ethiopia

Carte de répartition provisoire des glossines en Ethiopie (Map of the provisional distribution of glossinae in Ethiopia) by M. Ovazza. Published in Bull.Soc.Path.exot. 1956, 49, No. 1: 206. (Contribution a l'étude des diptères vulnérants de l'Empire d'Ethiopia - Contribution to the study of the wounding diptera of the Ethiopian Empire. IV. GLOSSINA).

Carte de Répartition de Simulium damnosum S. Woodi et de l'onchocercose humaine connue en Ethiopie (Map showing the distribution of Simulium damnosum S. Woodi and human onchocercosis known in Ethiopia), by P. Grenier and M. Ovazza, published in the Bull.Soc.Path.exot. 1956, 49, No. 1, p.183 (Contribution à l'étude des diptères vulnérants de l'Empire d'Ethiopia. II. Simuliidae. Simulies et onchocercose - Contribution to the studies of wounding diptera of the Ethiopian Empire. II. Simulidae. Sandflies and onchocercosis).

Carte de l'Empire d'Ethiopia par le Service cartographique de l'ORSTOM pour le mémoire de M. Ovazza, J. Hamon et P. Neri (Map of the Empire of Ethiopia by the cartographic service of ORSTOM to be inserted in the memorandum by M. Ovazza, J. Hamon and P. Neri): "Contribution à l'étude des diptères vulnérants de l'Empire d'Ethiopia I. Culicidae - Contribution to the study of wounding diptera of the Ethiopian Empire, I. Culicidae" published (without the map) in: Bull.Soc.Path.exot. 1956, 49, No. 1: p.151-182.

5. Madagascar

1:1,000,000

Carte de répartition des anophèles au 1:1,000,000 (1:1,000,000 map showing the distribution of anopheles) by A. Grjebine, published in: Aperçu biogéographique

des moustiques de Madagascar et des Comores (Biogeographical survey of the mosquitoes of Madagascar and the Comoro Islands). C.R. III PIOSA, 1957, B, p.33-38.

1:500,000

Carte des anophèles de Madagascar (9 feuilles) (Map of the anopheles of Madagascar - 9 sheets), A. Grjebine. Publ. Inst. Scient. Madagascar and Serv.géograph.Madag. 1958.

Carte de répartition approximative d'anophèles funestus et d'anophèles gambiae à Madagascar (Map showing the distribution of anopheles funestus and anopheles gambiae in Madagascar) (Oct. 1955) by A. Grjebine. 2 maps published in WHO Bulletin 1956, 15, p. 602.

6. Réunion

5 cartes en couleurs annexées au Rapport sur la lutte antipaludique à la Réunion, Campagne 1950-1951 (5 coloured maps appended to the Report on the anti-malarial campaign in Reunion, Campaign 1950-1951) by J. Hamon; published by the Direction départementale de la Santé de la Réunion (Departmental Division of Health of Reunion). Printing Mme. F. Cazal, Saint-Denis (Reunion) 1951.

Cartes de répartition des moustiques de l'Ile de la Réunion (Maps showing the distribution of mosquitoes on the Island of Reunion) by J. Hamon. 5 maps published in the Mémoires de l'Institut Scientifique de Madagascar (Memoranda of the Scientific Institute of Madagascar), series E. 1953, IV, p.525-528.

7. Africa (General map)

1:20,000,000

Carte de répartition de Simulium damnosum, S. neavei et de l'onchocercose humaine (Map showing the distribution of Simulium damnosum, S. neavei and human onchocercosis) by R. Taufflieb, 1951.

We would also draw attention to the Notes de cartographie (Cartographic notes) by F. Fournier and J.L. Houpeau, roneo ORSTOM and IDERT (Bondy), December 1952, II p.