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## The Distribution of Tsetse Flies and the Disease They Transmit to Humans in Zimbabwe

by

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There are two areas of tsetse infestation in Zimbabwe. The one, known as the Zambezi fly-belt, lies across the north of the country between the Mlibizi river in the west and the Gairezi river, which forms part of the border between

Zimbabwe and Mozambique, in the east. The other, known as the South-east fly-belt, is situated in the south-east of the country. It is currently confined to the immediate border region within the Honde river drainage (see Map 1.)

The extent of the Zambezi fly-belt is 62 900km<sup>2</sup> and its length is 850 km as measured along the southern limit-line. In the case of the South-east belt its present extent is minimal. It did, however, cover an area of 5 700km<sup>2</sup> prior to the commencement of control measures carried out during the period 1962 - 1971 (Robertson *et al*, 1972).

MAP 1

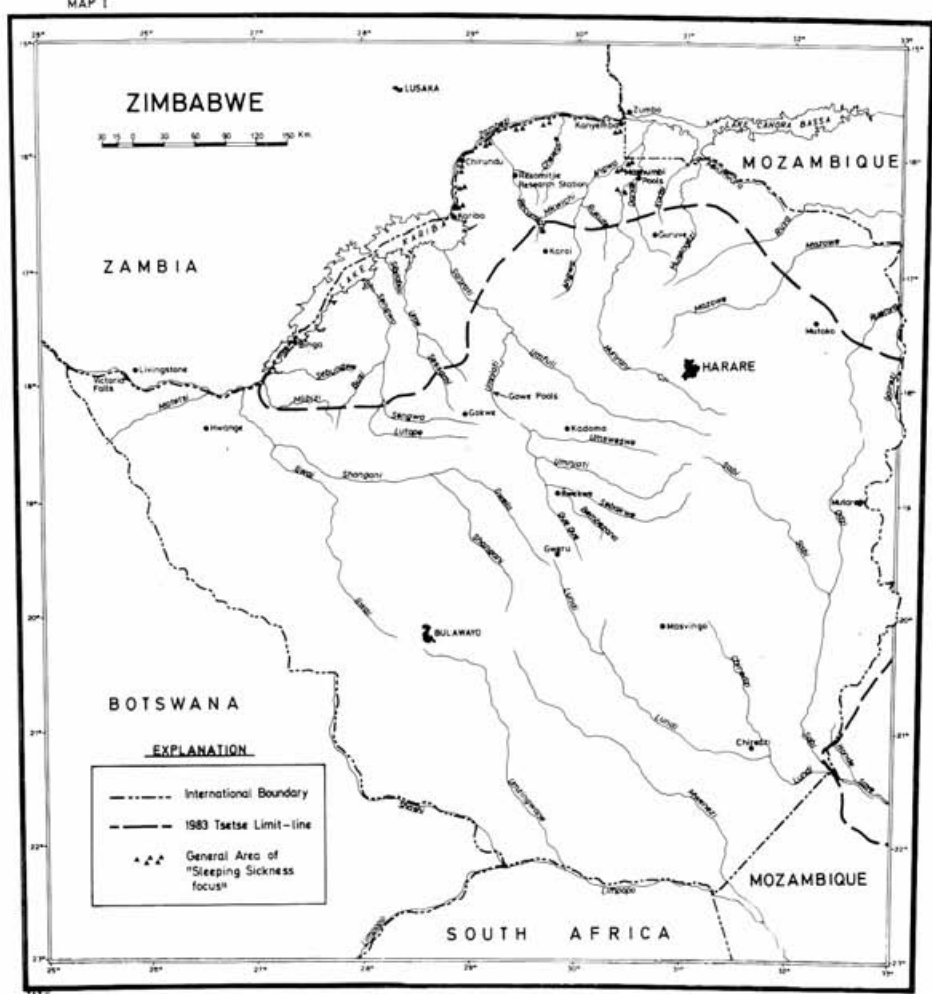


Table 1.

Confirmed cases of Human Trypanosomiasis related to the Zambezi fly-belt, Zimbabwe, for the area east of the Sanyati River, 1st October, 1963 to 30th September, 1982

	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
Kariba lake shore (Sanyati River-Kariba township)	1	7	14	2	1	0	3	4	1	0	0	0	0	0	0	0	0	0	0
Kariba-Chewore River	8	1	1	2	3	3	3	3	1	2	1	1	0	0	0	0	0	0	1
Rekomitjie Research Station	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Kanyemba	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Angwa-Hunyani drainage north of Mashumbi Pools	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Hunyani River between escarpment and Mashumbi Pools	2	0	0	0	5	1	1	0	2	0	0	0	0	0	0	0	0	0	0
TOTAL	11	8	15	4	10	5	7	7	6	3	1	1	0	0	0	0	0	1	1

*Glossina morsitans morsitans* Westw. is the basic species of the Zambezi fly-belt with *Glossina pallidipes* Aust. occurring in conjunction with it, in varying density, west of the Musengezi river, although in the southern extremity of the western third of the fly-belt, it is probably absent. Despite the presence of extensive areas of suitable habitat, only one *G. pallidipes* has ever been found east of the Musengezi river during the many surveys carried out since the early fifties. This was taken near the point where the Ruenya river leaves Zimbabwe.

Only *G. morsitans* has been recorded in the South-east fly-belt in recent years. *G. pallidipes* was however, taken frequently in the region in the past and in view of its reported existence a little to the east in Mozambique, it should be regarded as being present.

Human trypanosomiasis presents a relatively minor problem in Zimbabwe. Cases of the disease occur sporadically and only in very small numbers (see Table 1). The incidence of the disease seems to have declined in recent years, although the unsettled conditions of the latter years of the Liberation War (1976 to early 1980) might have obscured the true position.

The infections are usually contracted in one or other of a number of situations within the Zambezi drainage from where the disease has been recorded from time to time over the years, to the extent they have come to be termed rather loosely "sleeping sickness foci". These "foci" are very broadly speaking the area lying immediately along the Zambezi river between

Kariba and the Chewore river, the Kanyemba area, the Angwa-Hunyani drainage north of Mashumbi Pools and the Hunyani river area between the Zambezi escarpment and Mashumbi Pools. A case has also been recorded at Rekomitjie Research Station.

An important "focus" during the middle sixties and early seventies was the Kariba lake shore area between the Sanyati river and Kariba township. The number of cases recorded annually rose significantly, some of which proved fatal. The problem was attributed to increased man/fly contact as a result of greater human activity in the area in conjunction with a spectacular build-up in tsetse density which occurred soon after the lake reached full capacity in 1963. This was believed to be due to the influence of the new water body on the immediate surrounding vegetation. Mopane trees (*Colophospermum mopane*) and other deciduous tree species began retaining their leaves for the greater part of the dry season and preferred host animal species were attracted in some numbers by the green grass area developing along the water's edge. Considerable concern was shown by Government for the problem, which led to the mounting of a large-scale knapsack spraying operation in 1972. No cases have been recorded since.

Other than a few cases within the Uma drainage, below the Zambezi escarpment, in 1960 and a case on Paradise Island<sup>1</sup>, Lake Kariba, in 1976, there has been no indication of human trypanosomiasis in the area of the Zambezi fly-belt lying to the west of the Sanyati

river since the outbreaks on the Sebungwe and Busi rivers in 1911/12 and at Gowe Pools, Umniati river in 1933/34, described by Blair (1939).

No cases of the disease have been recorded in the Zambezi fly-belt east of the Musengezi river. Nor have any cases ever been known to be associated with the South-east fly-belt.

The Kariba - Chewore river "focus" would seem to be the most important based on frequency and number of cases. The permanent human population of this area is very low. The majority of cases recorded have been amongst visitors to the area, generally sport hunters and fishermen and their employees, most of whom have only spent comparatively short periods of time at one or other of the various hunting or fishing camps situated along the Zambezi. There have also been some cases amongst Government staff working in the area.

Only four cases have been recorded from the rather sparsely populated Angwa-Hunyani drainage north of Mashumbi Pools and Kanyemba areas during the period covered by Table 1. The importance of those "foci" could, however, develop, bearing in mind their proximity to the "Zumbo foci" of Mozambique where the incidence of the disease has risen appreciably in recent years (1976, 3; 1977, 3; 1978, 7; 1979, 53; 1980, 22; and 1981, 42)\*.

There are also some grounds for believing that other cases have occurred in those areas from time to time, which were never reported to the Zimbabwe medical authorities. This is primarily due to the remoteness of the areas from Guruve Administrative centre. Presumably the infected persons either died at their homes or sought assistance at the more conveniently situated Mozambique centre of Zumbo. The latter is probable, although there are no official records to confirm this, other than a report made in 1960 (Anon. 1960) of a Mozambique medical team which crossed the Zambezi from Zumbo to Kanyemba (referred to as Chapota) in 1958, where they examined 767 people. Blood smears were taken from 308 of these people, three of which revealed trypanosomes. The three were taken to Zumbo for treatment. The Mozambique authorities also stated recently it would be unlikely that any Zimbabwean seeking medical assistance at Zumbo would admit his or her domicile to them, hence the lack of information.

\* Not shown on map. It lies to the west of the Sibilobilo river mouth, just south of Photo Corner at grid reference PM165312.

The limited distribution of human trypanosomiasis in Zimbabwe in relation to the extent of the fly-belts now and previously has been the cause of considerable speculation over the years. The need for a "healthy carrier" to initiate and even maintain a focus of infection was propounded by Blair (1939) and more recently reiterated by him (Blair *et al*, 1968). On the other hand the game animal reservoir would seem the more likely source of the infection (Mackenzie and Boyt, 1974). The real puzzle, though, is why the disease recurs in the same localities time after time, albeit there might be long intervals between cases and seldom appears in new situations elsewhere in the fly-belts. Apted's assessment in Mulligan and Potts (1970) that the epidemiology of human trypanosomiasis due to *Trypanosoma rhodesiense* is dependent upon a complex inter-relationship between the trypanosome, the tsetse fly, reservoir animal hosts, man and climate suggests an explanation to this enigma. There is need for considerably more investigation into this interesting problem than has been conducted to date.

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