Acta Tropica, 51(1992)163–166

ACTROP 00214

Short Communication

Glossina fuscipes fuscipes and *Glossina palpalis palpalis* as joint vectors of sleeping sickness in the focus of Nola-Bilolo in the Central African Republic

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(Received 10 December 1991; accepted 26 February 1992)

Key words: *Glossina palpalis palpalis*; *Glossina fuscipes fuscipes*; Nola-Bilolo trypanosomiasis focus; Central African Republic; Trypanosomiasis

The largest focus of human (gambian) trypanosomiasis in the Central African Republic is the Sangha-M'Baere focus (formerly Haute Sangha), also known as the Nola-Bilolo focus (Desfontaines et al., 1988; Bailly et al., 1990). The focus is situated in the south-west of the Central African Republic, between Cameroon and the Congo. The north is bordered by the Mambéré-Kadei and Lobaye rivers. It is a wooded region (semi-deciduous forest). The focus is currently facing an epidemic upsurge. In January 1991, 109 new cases were notified, and 836 immunologically suspect cases were identified with the Testryp CATT^R.

Although the Central African Republic is situated in the *Glossina fuscipes fuscipes* zone, the presence of *G. palpalis palpalis* in the region of Nola has been known since 1948 where a few specimens were captured (Grejbine, in Maillot, 1953). Maillot (1961) has since confirmed this, particularly near the Kadeï and Sangha rivers. *G. palpalis palpalis* is also marked, rather imprecisely, near Nola, on Finelle's maps of *Glossina* distribution in Central African Republic (Finelle et al., 1963). No data were collected on the entomological situation in the Nola-Bilolo focus. No reliable entomological surveys have been carried out more recently. Reports on the most recent vector control trials with traps refer only to *G. fuscipes fuscipes* (Lancien et al., 1985; Noutoua, 1985, 1986). This paper presents the first result of a 3-month tsetse trapping investigation in this reviving focus.

The focus lies either side of the road from Nola to Yokadouma in Cameroon. Eleven villages were investigated (Carombois, Mekara, Kaolo, Bindjo, Nkouala, M'Poyo, Bilolo, Abogui, Domissili, Anam, Ziendi) in January, February and March

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1991 (end of the dry season). The survey was carried out in each village by trapping the tsetse flies in the main biotopes. From 4 to 15 bipyramid traps (Gouteux, 1991) were used continuously for 10 to 25 days. The flies were collected from the traps at least once a week. All the collected *Glossina* were preserved in alcohol for further laboratory examination. The male genitalia were mounted and the species determined in the Bangui ORSTOM laboratory according to the method of Machado (1954). A joint screening survey was carried out in January 1991 by the teams of the No. 2 Health Region (Berberati) and the trypanosomiasis programme (Bangui). During this survey 109 new cases presenting trypanosomes in lymph nodes were detected, among these 107 reside in the 22 villages from Nola to Cameroon frontier. A total of 1663 *Glossina* belonging to the *G. palpalis* group were captured in the study area. None belonged to the *G. fusca* group. The examination of the male genitalia demonstrated that both subspecies, *Glossina palpalis palpalis* and *G. fuscipes fuscipes*, were present in the focus. The inter-species frontier passes through Anam and Domissili villages, where both species co-exist. According to the results of the January 1991 screening survey (Table 1), both species were effective vectors of sleeping sickness, and moreover the vectorial abilities appear not to be significantly different ($Chi^2_{1ddl} = 0.98$). *G. palpalis palpalis* is the vector from Nola to Siembo, *G. fuscipes fuscipes* at Ziendi and in the remainder of the focus. Both species may be involved in transmission at Anam and Domissili.

Relict tsetse fly populations and endemic foci

The existence of relict pockets of *G. palpalis palpalis* may be of particular epidemiological interest. Indeed, the tsetse ecology and vector ability vary greatly according to the species. Maillot (1961) underlined the role of local races on the maintenance of endemic foci, especially when they occur at the geographical limits of the distribution area of the species. This situation applies to the *G. palpalis palpalis* population in this region. *G. palpalis palpalis* is normally a coastal species in Central Africa. The isolated populations of the Nola region are thus at the eastern limit of the species. It is of interest to note that the greater part of this focus is situated within one of these relict *G. palpalis* pockets. This seems to confirm the observation made by Maillot (1961).

Man–vector contact and fly ecodistribution

The high *Glossina* densities in the coffee plantations had already been noted in Bilolo during the preliminary trapping trials (Noutoua, 1985, 1986). However, the species

TABLE 1

Comparison of sleeping sickness prevalence rate, according to the species present in the Nola-Bilolo focus (excluding Nola City and the two villages with mixed species)

Species (vector)	$T+$	Number of patients	Prevalence rate (%)
Glossina palpalis	81	3917	2.1
Glossina fuscipes	15	959	1.6

TABLE 2

Tsetse distribution
The apparent densities per trap (AD) are expressed as the number of flies per trap per day (–, no datum).

Species	Village	Mean AD	AD per biotope			
			village	coffee	cassava	bathing
G. p. palpalis	Carambois	0.21	0.03	0.10	0.34	0.35
	Mekara	0.18	0.00	0.02	0.41	0.33
	Bindjo	0.41	0.10	1.25	0.15	0.55
	Kaolo	1.00	–	1.00	–	–
	Nkouala	0.93	1.23		0.69	1.42
	M'Poyo	10.66	24.78		4.00	2.44
	Bilolo	4.58	1.06	8.13	1.00	–
	Abogui	0.66	0.53	0.78	0.60	
G. p. palpalis + *G. f. fuscipes*	Domissili	0.78	0.71		0.35	1.06
	Anam	0.38	0.30	0.65	1.20	0.30
G. f. fuscipes	Ziendi	5.04	0.66	1.08	4.39	18.54

was misidentified, since *G. fuscipes fuscipes* alone was incriminated (Lancien et al., 1985). At M'Poyo, *G. palpalis palpalis* presents densities 4-times higher in the coffee plantations near the villages than near the water (cassava setting sites and washing or bathing areas), whereas in Ziendi *G. fuscipes fuscipes* presents densities 12-times higher near the backwaters than in the coffee plantations (Table 2). Thus, at least in the dry season, the principal man–fly contact points appear to differ according to the species.

To our knowledge, this sleeping sickness focus is the first in which two vector species, *G. p. palpalis* and *G. f. fuscipes*, are involved. This raises questions regarding parasite–vector relationships and their reciprocal adaptation. It thus seems necessary to conduct more thorough entomological and parasitological studies in the Nola-Bilolo focus, in order to understand the original features of the epidemiological situation and to break the transmission by especially adapted and effective vector control.

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