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Peridomestic breeding sites of *Glossina fuscipes fuscipes* Newst. in Busoga, Uganda, and epidemiological implications for trypanosomiasis

J. O. OKOTH

Summary

A search for *Glossina fuscipes fuscipes* puparia near homesteads in the sleeping sickness focus of Busoga revealed puparia and puparial shells under *Coffea canephora* (coffee), *Musa* sp. (banana) and *Lantana camara* thickets as well as under house verandahs and, once, inside a hut. This is the first description of *G. f. fuscipes* breeding sites in a peridomestic habitat. The implications of these findings in relation to the transmission of the current epidemic of sleeping sickness in Busoga is discussed.

Key words: *Glossina fuscipes fuscipes*; peridomestic; breeding sites; Uganda.

Introduction

It is known that *Glossina fuscipes fuscipes* can extend its distribution from its normal riverine and lacustrine habitat. For example, Chorley (1944) noted that, in Uganda, this species could be found near human settlements 12 miles from the shores of Lake Victoria. Willett (1965) attributed the sleeping sickness epidemic in Alego, Central Nyanza, Kenya in 1964 to *Trypanosoma rhodesiense* transmitted by *G. f. fuscipes*. He found that this fly had colonized *Lantana* thickets and other vegetation surrounding Luo huts. Although he mentioned that teneral flies and puparia were found under this vegetation he did not describe any breeding sites or give numbers of teneral flies and puparia found. (The term "puparium" is used in this paper to include contents of the integument.) Onyango et al. (1964) working in the same area during the same outbreak, reported that "the significance of *Lantana* in the area was not precisely determined but it is probable that *Glossina* was breeding in this vegetation type in some areas".

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The present epidemiological situation in Busoga is similar to that in Alego during the 1960's (Kutuza and Okoth, 1981). The breeding sites of *G. f. fuscipes* in Busoga have been mentioned in a short communication (Okoth, 1985). This paper gives details of these breeding sites and discusses them in relation to epidemiology of sleeping sickness in Busoga.

Methods

The area of study was briefly described by Okoth (1985). The general topographic and climatic conditions of Busoga have been described by Abaru (1985).

The study was carried out for 20 months from March 1983 to January 1985. Sharpened sticks were used to search for puparia in selected sites. Four searchers were normally assigned to each sub-area and these groups were rotated weekly. Six artificial breeding shelters were built in selected sub-areas. These shelters consisted of an open framework of poles with a sloping grass-thatched roof. They had a floor area of 4×1.5 cm, a back 0.5 m high and a front 1.25 m high.

Initially each group of searchers also carried a biconical trap (Challier and Laveissière, 1973) which they used to catch teneral flies to indicate the possible proximity of breeding sites. Trapping was abandoned once teneral flies were caught. Empty puparial shells were examined and any found with the normal posterior opening or operculum were considered to have hatched a viable fly.

Results

A total of 246 puparia and puparial shells were found in the following situations: *Lantana* thickets (33), *Coffea canephora* plantation (12), *Musa* plantation (3), verandahs of human and animal huts (15), inside animal hut (1), vegetation surrounding homesteads especially *Lantana* hedges (4) and forest (178). Puparia were found under logs, artificial shelters and individual plants. Comparing the performance of the artificial shelters with the natural sites, 63.5% of the puparia and puparial shells came from the artificial sites.

Collections tended to be larger during the two dry seasons (January to March, July to September). All puparial shells were recorded as having hatched normal flies.

Discussion

This study has shown for the first time that *G. f. fuscipes* not only rests in vegetation surrounding homesteads in Busoga but also that this species breeds there. Okoth (1980, 1982) studied the composition of the *Glossina* population in the Busoga fly-belt and found that increases in human activity had reduced the population of *G. brevipalpis* and *G. pallidipes* to the point where they were rarely found, whereas the population of *G. f. fuscipes* remained constant. *G. f. fuscipes* now breeds and rests in peridomestic situations in Busoga. This atypical behaviour results in more intense personal man/fly contact even at a very low fly density and has provided the basis for a man-fly-man cycle of infection which is the most likely cause of the current Busoga epidemic. Most breeding took place

where coffee, banana, *Lantana* and other vegetation grew under large trees (*Ficus*, *Mangifera*, *Cassia*, etc.), which provide the appropriate microclimates required by the fly.

Puparia were found under verandahs of, and within, human habitation as well as in huts used to shelter animals. The peridomestic behaviour of *G. f. fuscipes* in Uganda does not appear to be linked to any domestic animal as occurs in West Africa with *G. tachinoides* and *G. palpalis* with pigs (Baldry, 1964, 1968, 1969; Seketeli and Kuzoe, 1984), so removal of the latter would probably not reduce the peridomestic population of *G. f. fuscipes*.

When natural habitats and wild hosts are destroyed *G. f. fuscipes* will, in common with other members of the group, adapt itself to the peridomestic habitat.

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