

***Glossina palpalis gambiensis* selects its larviposition sites**

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Tsetse fly control is currently achieved through methods that focus on a unique behavioural target, “host seeking behaviour”. Other basic life history, behavioural or ecological traits remain largely unexplored despite their importance to tsetse biology and parasite transmission such as larviposition. Gravid tsetse females deposit a single larva in specific sites but little information is available on biotic and abiotic factors that govern site selection. Here, we study the larviposition site selection of *Glossina palpalis gambiensis* according to the presence of conspecific and heterospecific larvae buried in substrates. In a first experiment, two larviposition sites were presented to individual gravid female: autoclaved sand and conditioned sand with *G.p.g.* larvae. In a second set of experiments, four larviposition sites were offered to grouped (n=50) gravid female *G.p.g.*: an empty control tray, autoclaved sand, sand conditioned with *G.p.g.* larvae and sand conditioned with *G. morsitans submorsitans* larvae. Gravid females could either or not enter in contact with the substrate. Individual females selected significantly more often for sites conditioned with *G.p.g.* pupae ($P < 0.05$). In grouped larviposition experiments, females selected significantly more often for sites with pupae ($P < 0.05$), but were not able to discriminate between sites containing conspecific and heterospecific pupae ($P > 0.05$), either with or without substrate contact. These results present the first indication of an aggregation effect of tsetse pupae in *G. p. g.* The selection of sites containing larvae without any contact with the substrate suggests the implication of volatiles

compounds. Isolation of such semio-chemicals would allow the development of larviposition traps to attract gravid females.