Trap catch size was used to investigate whetherGlossina pallidipes andG. longipennis could distinguish between the urine of the African buffalo, cattle, and waterbuck at Nguruman in southwest Kenya. NG2G traps baited with aged urine of these bovids caught significantly more of each tsetse than did the controls. The mean catch of either tsetse species in traps baited with aged urine of buffalo and cattle (tsetse hosts) and waterbuck (a nonhost) did not differ significantly. Aged urine from both tsetse hosts (buffalo and cattle) and the nonhost (waterbuck) was found to contain 4-cresol and 3-n-propylphenol in about the same ratio. However, the aged urine from other tsetse hosts (bushpig and warthog) lacked 3-n-propylphenol. Cattle urine had to be aged outside the soil to produce statistically significant increases in the trap catch ofG. pallidipes. Furthermore, patches of soil on which fresh urine of cattle was deposited, and in which it was aged, failed to effect a significant increase in the trap catch of eitherG. austeni, G. brevipalpis, orG. pallidipes as Gazi, southeast Kenya. The likelihood of tsetse either differentiating its hosts from nonhosts or locating favored hosts by the urine scent appears remote under natural conditions. It is more likely that the chemical signals critical for host location by the tsetse emanate from skin glands rather than volatilize from the urine of mammals.