Table 2 Mean numbers of *Anopheles gambiae* s.l., *An. funestus*, *Culex* spp., *Mansonia* spp., *Aedes* spp. and other mosquito species collected indoors per night in Lwanda village, western Kenya. Mosquitoes were attracted to various synthetic attractants dispensed from nylon strips or LDPE sachets mounted in MM-X traps placed under a bed net. *N*=number of replicates (nights); *n* is total number of mosquitoes per taxon caught over 40 nights. Numbers followed by different letter superscripts in the same column differ significantly ($P<0.05$)

Treatment (delivery)	*N*	*An. gambiae* s.l.	*An. funestus*	*Culex* spp.	*Mansonia* spp.	*Aedes* spp.	Other spp.
Empty (control)	40	0.65^{a}	0.55^{a}	2.28^{a}	0.25^{a}	0.10^{a}	0.43^{a}
IB1 (LDPE)	40	1.30^{b}	0.53^{a}	1.85^{a}	0.53^{b}	0.15^{ab}	0.43^{a}
IB1 (nylon strips)	40	1.43^{b}	1.15^{b}	2.98^{b}	0.55^{b}	0.13^{a}	0.58^{b}
SB (LDPE)	40	1.05^{b}	0.58^{a}	2.48^{a}	0.33^{ab}	0.25^{a}	0.38^{a}
SB (nylon strips)	40	1.03^{b}	1.73^{c}	1.88^{a}	0.60^{b}	0.38^{b}	0.40^{a}
MB (LDPE)	40	1.03^{b}	0.58^{a}	2.15^{a}	0.55^{b}	0.08^{a}	0.83^{c}
Total mosquito catches (*n*)		259	207	544	112	43	121

blend, except for the 1,000-fold dilution, for which no difference in attractiveness between the two blends was found. Only with the highest dilution (100,000) did significantly more ($P<0.05$) mosquitoes respond to the augmented blend than to the standard blend. This blend (MB) subsequently was chosen for further evaluation.

Efficacy of Attracting Mosquitoes to Optimized Blend Under Semi-field Conditions The attraction efficacy of MB vs. IB1, SB, and a control (unbaited trap) was evaluated over a period of 16 nights i.e., from 30 November 2010 to 16 December 2010. Out of the total of 3,200 mosquitoes used for these experiments, 2,152 were captured in response to the various treatments. There was a significant effect (GLM; $P<0.001$) of treatment on mosquito trap catches. Whereas all the synthetic blends attracted significantly more mosquitoes than the unbaited control ($P=0.001$), MB attracted more mosquitoes than blends IB1 ($P=0.001$) and SB ($P=0.001$). Blend IB1 attracted more mosquitoes than SB ($P=0.001$). Results of these experiments are shown in Table 4.

Capacity of Trapping Wild Mosquitoes Using Optimized Blend Vs. Existing Alternatives The competitiveness of MB over other baits in attracting malaria and other wild mosquitoes was evaluated in Kigoche village for 30 d spanning the period 01–30 April, 2011. A total of 2,024 mosquitoes including 1,105 (54.6%) *An. gambiae* s.l., 433 (21.4%) *An. funestus*, 201 (9.9%) other *Anopheles* species and 283 (14%) *Culex* species were collected. The collections also included one *Aedes* and one *Mansonia* mosquito representing 0.1% of the collection. The *An. gambiae* s.l. collected included 34 male and 1,071 female (92.8% unfed; 5.3% blood fed, and 1.9% gravid) mosquitoes. It is worth noting that MB collected higher fractions of blood fed *An. gambiae* s.l. (38.6% i.e., 22/57) and *An. funestus* (75% i.e., 6/8) mosquitoes than IB1 and SB. Polymerase chain reaction analysis revealed that the *An. gambiae* complex mosquitoes were 96.67% *An. arabiensis* and 3.33% *An. gambiae s.s*. The *An. funestus* species of mosquitoes included 56 male and 377 female (96.8% unfed; 2.1% blood fed, and 1.1% gravid) mosquitoes. All *Culex*, *Aedes* and *Mansonia* species collected were female. The *Culex* sub-sample consisted of 196 (97.5%) unfed and 5 (2.5%) blood fed mosquitoes. The other *Anopheles* species were neither classified by sex nor abdominal status.

Table 3 Mean number ± SE of *Anopheles gambiae* caught per night in MM-X traps baited with a synthetic blend containing various dilutions of 3-methyl-1-butanol plus a standard blend vs. the standard blend alone, dispensed from nylon strips, under semi-field conditions. *P*-values give the significance of statistical difference between the catches. *N* is the number of replicates (nights) and *n* the number of mosquitoes trapped

Dilution (%)	*N*	*n*	% response	Mosquito trap catches (mean ± SE)		*P*-value
				SB	Synthetic blend	
Pure compound (99.9)	4	547	68	77.50±16.97	59.25±2.14	0.002
10.0	4	340	43	52.00±18.48	33.00±11.20	0.001
1.0	4	474	59	68.25±13.12	50.25±17.80	0.001
0.1	4	412	52	53.25±4.290	49.75 ±14.42	0.490
0.01	4	307	39	45.25±6.24	31.50±4.05	0.002
0.001	4	379	47	42.25±12.59	52.25±8.09	0.040