catches, the current gold-standard sampling tool. Seven position identified to each of this villages with the distance of 100m from one trap to another. The different traps rotated to the seven positions, that at the end of a 7 day rotation, each trap type had been to each of the seven locations at least once. The experiment were replicated 3 times for a total of at least 21 nights, start from 18:00hrs to 06:00hrs. The outcome measure will be the comparisons of effectiveness of different traps in terms of capturing high density and diversities of outdoor host seeking mosquitoes relatively to the reference method (HLC).A total of 62317 of all female mosquitos were collected for six villages for both seasons wet and dry, where BG-Sentinel n=5571 (8.94%), HLC n=13909 (22.32%) ITT-C n= 3775 (6.06) MMX n= 4468(7.17%) M-Trap n= 8429 (13.52) M-Trap with CDC Light trap n=12011(19.27%) and Suna trap n=14003 (22.47%) The result is showing there is no significant different between HLC, Suna trap and M-trap fitted with CDC for all total number of female mosquitoes but there is a different between HLC, against M-trap, BG-Sentinel, MMX and ITT-C in the first round.

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CHARACTERIZATION OF SURFACE LAYER MICROBIAL COMMUNITIES OF *ANOPHELES GAMBIAE* COMPLEX LARVAL HABITATS IN BURKINA FASO

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Afro-tropical malaria vectors of the *Anopheles gambiae* complex represents a remarkable example of adaptive radiation thought to be driven by ecological divergence operating predominantly on the larval stages. Some ecological factors involved in larval niche partitioning, such as different ability to escape predators or tolerate abiotic stress, have been identified. Little is known, however, about the role in this process of environmental microbial communities occurring in the larval habitats. Thus, we tested the hypothesis that members of the *An. gambiae* complex are preferentially associated with different microbial communities.To this aim, we sampled *An. gambiae* s.l. larvae and the surface layer of 63 randomly chosen water collections in the village of Goundry (Burkina Faso). The microbiological profile of each site was obtained by PCR amplification using consensus primers flanking the V6-V8 region of bacterial 16S rDNA, and subsequent sequencing by Illumina Miseq. Paired-end reads were taxonomically analysed using the two bioinformatic pipelines BioMaS, for identification at species level, and QIIME, for OTU based analysis. The relative frequencies of mosquito species occurring in the larval sites (i.e. An. arabiensis, *An. gambiae*, and *An. coluzzii*) were associated to the inferred bacterial composition by Canonical Correspondence Analysis (CCA).Preliminary analysis of a subsample of 37 breeding sites based on 1,620 molecularly-identified mosquitoes (45% *An. coluzzii*, 38% An. arabiensis, 17% *An. gambiae*) showed that bacterial composition accounted for 6% of the total variance in larval relative frequencies. The first two canonical axes, which accounted for ~75% of the explained variance, separated the three species and associated bacterial communities.The results indicate that microbial communities occurring in larval habitats can be informative about the composition of sympatric species of the *An. gambiae* complex, supporting the hypothesis that particular environmental bacteria may represent an ecological marker of niche partitioning for these malaria vector species.

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A DRAMATIC DECLINE OF MALARIA TRANSMISSION IN AND AROUND IFAKARA, A RAPIDLY GROWING TOWN IN SOUTHEASTERN TANZANIA, SINCE 2000

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Ifakara is a small but rapidly growing town of about 60,000 people in South-eastern Tanzania. A steady but high increase of population in Ifakara area has resulted in a rapid urbanization of the area, which in turn has had a negative impact on malaria transmission. In 2003, Ifakara had an estimated annual entomological inoculation rate (EIR) of 29. Our study aimed at determining changes in malaria transmission over the past decade. A total of 110 households were randomly sampled from across the five wards of Ifakara area. Mosquito collection was done between June 2015 and January 2016, using CDC light traps indoors, and Suna® traps outdoors. Comparison of indoor and outdoor mosquito density was done using the Human Landing Catches (HLC). *Anopheles* mosquitoes were morphologically identified, and analysed for *Plasmodium* sporozoites. Blood fed mosquitoes were also examined for blood-meal sources. A total of 2658 *Anopheles* mosquitoes were caught from 800 trap nights and 80 Human Landing Catches, including: 2,131 *Anopheles gambiae* sensu lato, 355 *Anopheles funestus* group, and 172 *Anopheles* coustani. Of all the malaria vectors, 85% were collected only from two wards, which were the most rural of the 5 Ifakara wards. All the *An. gambiae* s.l. were identified as An. arabiensis, and 95% of the *An. funestus* were identified as *An. funestus* funestus, the rest being An. rivulorum. Enzyme-linked immunosorbent assays were performed on 2,658 *Anopheles* mosquitoes and only one was found positive, which was an *An. funestus* caught outdoors by HLC in Katindiuka ward. *Plasmodium* sporozoite rate was calculated as 0.04% in all *An. gambiae* and *An. funestus* combined, and 2.8% in just the *An. funestus*. Overall mean nightly biting rates by malaria vectors were 3.02 mosquitoes per night, thus the EIR was estimated as 0.128. In conclusion, the EIR in Ifakara has dropped by over 99% in just over a decade, compared to what was observed in previous reports. The on-going transmission is concentrated in only a small and more rural section of the Ifakara area, which could be readily targeted with improved control measures towards local elimination.

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SPATIAL SEGREGATION OF VECTOR MOSQUITOES IN URBAN BALTIMORE, MD

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Understanding processes that govern vector mosquito coexistence can help predict disease risk and guide public health interventions. Theoretical and empirical ecology indicate that under resource-limiting conditions in a constant environment, competition between species should result in the exclusion of the inferior competitor. Multiple vector mosquito species coexist in southwest Baltimore, MD, where vacant lots containing high densities of water-filled trash containers are interspersed within a matrix of maintained lots with fewer containers. One hypothesis that may help explain the coexistence of *Culex* mosquitoes with the superiorly competitive *Ae. albopictus* in Baltimore is a colonization-competition tradeoff, which predicts species coexistence in an environment with ideal habitats when an inferior competitor in a metapopulation can escape exclusion by having a superior ability to colonize vacant or sparsely populated patches. In this study, we tested the prediction that there would the highest abundances of *Cx.* species and *Ae. albopictus* in vacant lots compared to intervening occupied lots. We placed 5 oviposition traps in each of 6 vacant lots and 6 randomly selected sites in intervening