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Mutiti/Chisunka OVI-Trap project Update

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The OVI-Trap project, began in earnest in February of 2017, after gratefully receiving funding from World Connect in the form of a 750 USD Accelerator Grant. The first steps of using portions of the funding followed priorities met in succession. Those priorities are as follows:

1) Use portion of grant to acquire necessary tools to cut tires and 12mm steel rod. Most important was a reciprocating saw for cutting tires, an angle grinder for working with steel and a drill, all purchased in Zambia’s capital Lusaka, as tools of this nature are nonexistent in Luapula Province.

2) Purchase of hose, drill bits and tires from local merchants.

2a) After much wrangling, we were able to also able to acquire disused tires from the Mansa district health office, where old tires from fleet vehicles were left in piles behind the building. I used the argument of how ironic it was that the district health office, in charge of malaria outreach, also had a perfect mosquito breeding ground on its premises. They saw the logic, as well the PowerPoint which I had presented on the OVI-Trap project (which will be included with this update), and the head Environmental Health Tech brought tires to our site within two days. We were so thrilled that we have their support.

3) All other grant monies are being kept for purchase of future materials needed.

At its outset, starting in February of this year, much has been done to communicate within different levels of interested parties of the nature of the project, and of its goal; to approach the untouched vector control of larval containment, and to integrate with existing vector control measures already in place. I will include a PowerPoint with this update, which I have used within the last three months to communicate with district, provincial and national officials, to better elucidate the project framework.

The communication of the project wasn’t only relegated to Zambian Bureaucracy, but also to catchment health workers, and interested parties within village zones. In Mutiti Catchment, we have 13 zones, which contain anywhere from 5 to 10 villages within. Before our initial phase we conducted a census of the catchment was taken by some very intrepid Community Health Workers. It should be noted that CHW’s are those individuals who care for the health of their community, and volunteer their time willingly to help with all things health related. The duties of a CHW are given by an elected HCC (Health Community Committee) member, who are also volunteers, but hold a less hands on role within their zone. The census form we created would cover three data points, both we and the district required for the project to commence. The data points also would coincide with the upcoming nationwide mass distribution of ITNs (Insecticide Treated Nets), which is to commence in May, and the needed numbers of households, along with sleeping spaces, as well incidence of malaria for that household. The final data point; that of incidence is important to the OVI-Trap project, as it gives baseline data for success or failure. Based on our census, which incidentally was 9,356, an increase of close to 300 from the previous year, we determined that on average over the course of 2016, there was an incidence rate of 86.1% for positive malaria cases over the year. This average included both rainy season and also dry season where mosquitoes are less abundant. The number was staggering, and that helped to push the case for accepting innovation, both in the fourth malaria vector, as well as information, communication and education of malaria prevention.

It should be noted that within the OVI-Trap project, there exists a component of training community members to be “malaria agents”, or those who would work solely as both daily maintainers of the traps within their respective zones, as well eyes and ears on the ground to better communicate malaria prevention measures. Interestingly, Luapula Province in northern Zambia has many lakes both large and small. The main source of income here is fishing and farming because of the large amount of yearly rainfall. Many folks may see their mosquito net as a free fishing net, and the use of such nets has been very detrimental to Zambia’s fish population, as the insecticide that is laced within, kills many of the insects within the water, which the fish depend on as food source. The tragic notion is that a person risking malaria for his/her family by not using their net will also risk access to a reliable food source in the process. The negative causal relationship that has transpired has resulted in Luapula enacting its first ever nationwide fishing ban between October and March because of this. The trained “malaria agents”, or the newly coined “ZMATs” which stand for “Zambian Malaria Action Team” members will help to keep those within their villages informed of proper net usage, as well serve as trained malaria experts for their respective communities. These ZMAT members will be separate from the already existing CHW’s, who provide services not related to trap maintenance or malaria education, but will be handpicked by CHW’s to work as such. Though this is a voluntary position, the newly minted ZMAT will have a position within their zone which will set them apart, as well will give many without much to do, a daily task which is both meaningful as well beneficial to the community. With 13 zones within Mutiti, and 7 within Chisunka catchments we have determined there should be two appointed ZMATs per zone. The logic behind the choice of two members fulfills two needs 1) there being at least one always on call to maintain the OVI-Traps regardless of sickness, or other extenuating circumstance and 2) having two members insures that the zone which could in some cases be 10 Km square, would be covered.

In late February, I was able to meet with Dr. Busiku Hamainza, head epidemiologist at the Zambian National Malaria Control Center in Lusaka (http://www.nmcc.org.zm) . I presented the project PowerPoint, as well the details of trap design and construction. He was very interested in the project, but was also quick to tell us that in order for any project to be accepted by the Zambian national malaria initiative, it had to be framed as a study which had gone through all necessary channels, like ethics and project design review to be considered. The cost for both reviews was very prohibitive for one on a monthly Peace Corps salary of 250 USD per month. The results from the meeting were that Dr Busiku would endorse a pilot program, which would be done in preparation for a follow up study. Our goals, though not changed have been altered slightly to accommodate this parameter. For one month, (April) we will conduct a controlled deployment of eight traps in Mutiti and in Chisunka catchments. Four of these traps will be covered, and four will be uncovered (See Design) and each set of two will have one of four attractants which have been used in various studies specific to the Anopheles mosquito, within. It is very good in the long run to have the National Malaria Control Center on board with us, as we are operating within their parameters, hopefully to be implemented if the traps are successful.

One last mention is the importance of data collection. The OVI-Trap team has at its core four members, and two auxiliary members, the two being digital mapping coordinator, as well education curriculum developer. Both will be essential in helping to dovetail with district and national entities already using the technology for malaria control, disease proliferation, and sanitation control within the country, as well inclusion of malaria education to already existing education materials. We are in contact with the organization ONA.io, a company based in Tanzania, which provides logistical support via mapping for sub-Saharan Africa. The Zambian government uses this software for most of their health related information aggregation, and we are excited to see that this platform can be run on either a smartphone, or a brick phone, which many rural Zambians have. This added piece of mapping helps to legitimize the OVI-Trap project in the Zambian government’s eyes, as we will be able to upload data to their infrastructure, as the information is available.

As of this date in mid-April, we have begun small scale testing deployment at both Mutiti Rural Health Center, as Well Chisunka Rural Health Center of 8 traps each, with daily monitoring and collection to eventually expand to 3 zones within each catchment in June 2017. It should be noted that this deployment strategy was suggested by the Zambian Nation Malaria Control Committee, to best keep within their national guidelines of study design and implementation. As the OVI-Trap project moves forward after he month long testing period, Mutiti will have deployment in three of its most populous zones, with approximately a total population of 3,000 people, and Chisunka will with a rough population of 1,700 people. Each trap will cover a 100 meter diameter, with taps placed within village home cluster epicenters. The importance of having these two sites for initial deployment, helps with data collection accuracy, and also will further broaden the scope of prevalence and incidence rates of malaria, and subsequent changes due to trap usage throughout the year within Luapula province. We are excited to move ahead with this innovative project, and to help a country struggling with the crippling prevalence of malaria in any way we can, and we deeply thank World Connect for the help in doing so.