



**SUCCESSFUL PILOT • READY TO SCALE GLOBALLY**

**1**

GO Mosquito Habitat Mapper app created to identify and mitigate breeding sites



**7**

Focus groups guided project's human-centered design



**25**

Spanish / Portuguese educational assets



**100+**

Public health officials engaged through briefings and workshops



**387**

Teachers trained in mosquito surveillance and breeding site mitigation



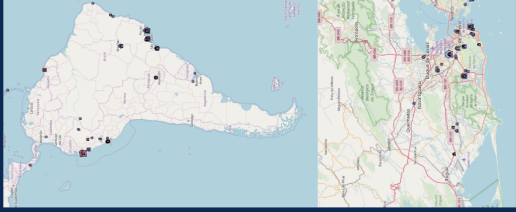
**829+**

Vector-borne mosquito breeding sites mitigated by dumping standing water in schools, homes and communities



**1,318+**

Observations using the GO Mosquito Habitat Mapper mobile app



**98%**

Of households surveyed in pilot are now taking steps to eliminate Zika (22% increase)



## **GO MOSQUITO Challenge Community Campaign (MCCC)**

Working Together to Reduce Risk of Vector-borne Disease in Brazil and Peru

September 2016 – July 2018

USAID Award No. AID-OAA-F-16-00099

### **Overview**

The global health crisis posed by vector-borne diseases is so great in scope that it is clearly insurmountable without the active help of tens-or hundreds- of thousands of individuals working to eradicate risk in communities around the world (cf. Hotez 2016). The IGES MCCC project offers a solution to this global health challenge rooted in a crowd sourced science and action initiative, leveraging the existing capacity and networks of scientists, teachers, students, and citizen scientists participating in The GLOBE Program and its public citizen science counterpart, GLOBE Observer. This initiative connected health education, environmental awareness, scientific discovery and community-based action in a citizen science effort with direct benefits to NASA science and public health decision making.

Recent mosquito borne disease epidemics have demonstrated the critical importance of risk communication and community engagement but accommodating community knowledge attitudes and practices is a significant challenge (Bardosh et al. 2018). Our mission is to engage community youth in the critical activities of surveillance and mosquito breeding site identification and mitigation. By embedding public health risk reducing activities in science programs at schools, we are able to work in local contexts, with teachers connecting learning to community knowledge and practices.

For vector-borne diseases for which no vaccines are available, such as Zika and chikungunya, surveillance, mitigation, and education are the only tools available to prevent vector borne disease. The MCCC project took a three-pronged approach to reduce the health risks of mosquito vector borne disease in communities: surveillance, breeding site mitigation, and education, working in partnership with The GLOBE program. This successful pilot is ready to be scaled globally.

The infographic shown on the cover to this report shows some of the key outcome metrics for MCCC, with brief explanatory information and sources for the metrics on the following pages. IGES milestone reports provide detailed information.

## 1 App

IGES is a member of NASA's GLOBE Observer (GO) team, and science lead for the Mosquito Habitat Mapper (MHM) protocol and app for citizen science. The MCCC project piloted the GO MHM app in Brazil and Peru. Data collected using the app is uploaded to The GLOBE Program Data and visualization system, where it is freely accessible: <https://www.globe.gov/globe-data>.

## 7 Focus Groups

Seven focus groups were conducted that helped design, evaluate, and improve the project.

- **December 2016-February 2017: Conducted two virtual focus groups of teachers** in Brazil (n=44) and Peru (n=20), who were identified by the GLOBE Program Country Coordinators. Responses informed workshop design as well as a data challenge campaign and science fair that met teachers' instructional needs and time constraints. Conducted online asynchronously using focusgroupit.com.
- **May 2017: Public Health Focus Group: San Jose dos Campos, Brazil**  
IGES met with members of the public health department (n=8) in San Jose dos Campos in May 2017, and two of those public health representatives attended a training workshop.
- **September 2017 Focus group with Country Coordinators from the GLOBE Latin America and Caribbean (LAC) region (n=21)**, Mexico City. IGES hosted a two-hour session at the 2017 LAC annual meeting to introduce the MCCC project and to discuss its suitability for future broad implementation in other GLOBE LAC countries.
- **March 2018: Two in-person focus groups in Matinhos, Brazil** - one for teachers and a second focus group for public health workers.

The **Public Health Focus Group was held March 23 (n=15)**. IGES met with public health workers, including managers, technicians and surveillance field workers. These individuals participated in a half day workshop where they were introduced to the GO MHM app and how the app supported identification and reporting of vector taxa. After the workshop, IGES assembled a focus group, asked a set of intake questions followed by questions designed to better understand their perspectives on the app and its usefulness to the public health sector.

The **Teacher Focus Group was held March 21 (n=9)**. One of the most important findings of this discussion is the need for GLOBE Brazil to work more closely with the education ministries and districts so that the teachers can receive additional support and obtain promotion points for participation.

- **May 2018** IGES conducted a **focus group session with GLOBE LAC region Country Coordinators (n=15)** at the GLOBE Zika Education and Prevention Master Trainer Workshop in Lima, Peru (note: the workshop itself was sponsored by Department of State and not part of the USAID MCCC project). Discussion focused on three questions: The focus group was presented with three questions:
  - What makes a good workshop?
  - What ensures the success of a data campaign?
  - What do you need to build on the momentum of the GO Mosquito (MCCC) project in your own country?

This workshop also provided an opportunity for IGES to meet with MCCC project partners from GLOBE Brazil and GLOBE Peru Country Coordination offices. These discussions focused on reports of their progress and recommendations going forward.

- **July 2018:** GLOBE Annual Meeting, Killarney Ireland – Re-convened with advisors from the GLOBE Latin America and Caribbean Region, including the GLOBE Latin America and Caribbean Regional Coordinator, a representative from Argentina and a representative from Peru (n=3) to discuss lessons learned. The discussion centered on the value they placed on the human-centered design approach applied during the planning of the MCCC project, and they specifically stressed the importance of giving potential participants a voice in identifying the activities they wanted to participate in and what range of classroom deliverables they felt were possible during the campaign, in light of their other responsibilities. They also requested access to the Spanish web assets we created on <http://mosquitoes.strategies.org> to communicate with teachers and students during the data campaigns, so that they could adapt and redeploy them from the GLOBE LAC regional website as they begin coordination of a regional campaign.

## **25 Spanish/Portuguese Language Education Assets**

Resources are available online at: <http://mosquito.strategies.org> and include training materials, presentations, handouts, games, classroom activities, and an international curriculum (*Mosquito!* developed by the Smithsonian Science Education Center in collaboration with IGES).

## **50 Student-Submitted Community Action Awards**

Teachers that completed an MCCC training workshop had an opportunity for their classes to participate in a series of data collection and weekly challenges in order to qualify to submit a science fair/community action project and earn prizes, which ranged from small cash awards to equipment - sets of clip-on macro lens to use with the GO MHM app. (see <https://mosquito.strategies.org/index.php/en/english/school-data-challenge/>)

Two rounds of data challenges were conducted: Fall 2017 and spring 2018, with a total of 50 student projects awarded, including 26 from Peru and 23 from Brazil). The May 2018 projects can be seen at:

- Peru: <https://mosquito.strategies.org/index.php/es/espanol/feria-de-ciencias/>
- Brazil: <https://mosquito.strategies.org/index.php/pt/portugues/feira-de-ciencias/>

### 100+ Public Health Engaged

Throughout the project, public health community was engaged through briefings, workshops and focus groups. USAID personnel and GLOBE Country Coordinators were instrumental in identifying and connecting IGES with public health officials and workers.

**June 2017 workshops, presentations, and meetings:** GLOBE Country Coordinators in Brazil and Peru set-up meetings and invited local public health officials to attend the June teacher training workshops to learn more about the MCCC project and GLOBE Observer Mosquito Habitat Mapper. As a result, **a total of 41 public health officials were engaged** (Brazil – 10; Peru – 31). See Milestone 2 and 4 reports for details.

### Public Health Focus Groups: 24 participants

**During March-April 2018 GLOBE Country Coordinators in Brazil and Peru set-up several meetings for public health officials** to learn more about the MCCC project and GLOBE Observer Mosquito Habitat Mapper. As a result, IGES engaged with >50 public health officials from the following organizations. In most of these venues, IGES met with the principals and others who also came to the meeting.

#### Brazil

- Public Health Department, Vector borne Disease, San Jose dos Campos (n=3)
- FIOCRUZ, Rio de Janeiro (n=5 department heads, plus many others, estimated 15 total)
- World Mosquito Project (WMP), Rio de Janeiro (n=5)
- City Public Health Department, Matinhos (n=15)
- PAHO, Brasilia (n=1)
- Ministry of Health, Brasilia (n=5)

#### Peru

- Ministry of Health, Lima (n=19)
- CARE- Together Against Zika Project, Lima (6 project leaders, 3 cities, plus approximately 20 volunteers and professionals in the field at an information meeting)

### 387 Teachers Trained

A total of 16 training workshops for 387 teachers were conducted in partnership with the GLOBE Country Coordinators in Brazil and Peru. Dates, locations, and number of participants are shown in the table below.

Date	Workshop Location	Number of Teachers
May 29-30 2017	San Jose dos Campos, Brazil	32
June 1-2 2017	Rio de Janeiro, Brazil	29
June 5-6 2017	Matinhos, PR, Brazil	29
June 14-15 2017	Piura, Peru	36
June 17 2017	Chiclayo, Peru	39
June 20-21 2017	Rimac, Lima, Peru	34
June 23, 2017	Iquitos, Peru	12
March 15 2018	San Jose dos Campos, Brazil	14
March 19 2018	Rio de Janeiro Olympic Facility	16
March 26, 2018	Natal, Brazil	25 teachers, 18 high school students
March 27-28, 2018	Brasilia, Brazil	35
April 11, 2018	Colgio María Montessori, Piura	24
April 12 2018	Colgio María Montessori, Piura	16
April 18 2018	Pontifica Universidad Católica del Perú, Lima	15
April 19 2018	Pontifica Universidad Católica del Perú, Lima	15
April 23 2018	Iquitos Education Ministry	16
	<b>TOTAL</b>	<b>387 teachers</b>

Additional workshops were held with public health workers and college-level students. These are shown in the table that follows.

Date	Workshop Location	Number of Participants
March 21, 2018	Matinhos, PR, Brazil	15 public health workers and public health students
March 22, 2018	Matinhos PR, Brazil	25 undergraduate students
April 13, 2018	Universidad Piura	15 engineering students
April 17, 2018	Universidad Peruana Cayetano Heredia, Lima	11 graduate students, public health

## **829+ Vector-borne mosquito breeding sites mitigated/ 1318+ Observations using GO MHM**

*Source: GLOBE Advanced Data Access Tool. See [bit.ly/MCCC\\_Data](http://bit.ly/MCCC_Data)*

From May 29, 2017-June 30, 2018 GO MHM data was collected at 488 sites, with 1,316 observations submitted and 829 breeding habitats mitigated. By country, these included

- Brazil: 353 sites (840 observations; 504 breeding habitats mitigated)
- Peru: 135 sites (476 observations; 325 breeding habitats mitigated)

## **98% of households surveyed in pilot are now taking steps to eliminate Zika (22% increase)**

*Source: NORC at the University of Chicago (2018) USAID/IGES Mosquito Challenge Community Campaign (MCCC): Key Findings MCCC Pilot Household Survey in Brazil.*

NORC at the University of Chicago was contracted by IGES to conduct an evaluation of the pilot MCCC program. In collaboration with IGES, NORC designed a household panel survey that measured the effect of the MCCC program intervention on citizens' knowledge, attitudes, and practices about Zika and other vector-borne illnesses. NORC conducted this in two waves of a panel survey, at baseline (administered in late summer 2017) and again at endline (administered in early summer of 2018).

The household survey was fielded in the three Brazilian regions of the MCCC intervention – Parana, Rio de Janeiro, and São José dos Campos – and administered among parents of students participating in the MCCC program. Initially, the pilot survey was also to be administered in Peru, but survey administration in Peru was cancelled due to logistical difficulties exacerbated by a national teachers' strike.

A key finding from the household survey was that respondents increased their Zika-related actions at home and in communities, post-MCCC: Nearly all respondents (99%) reported at endline that they were taking some action to prevent Zika transmission, which is a 9% increase from baseline. The adoption of certain Zika prevention behaviors increased over time. For example, at the endline, nearly half of respondents in the 3 regions reported using larvicides, which was a substantial increase in these behaviors compared to the baseline. To illustrate this phenomenon, in Sao Jose, the percentage of respondents using larvicides increased from 13% to 57% during the study period.

Furthermore, many more respondents at endline reported they were taking actions to prevent Zika in their home communities. The percentage of respondents reporting taking action to prevent the spread of Zika in the community increased from 76% at baseline to 98% at endline. The fact that nearly all respondents at the endline reported taking action to address Zika

suggests that MCCC may have played a role in encouraging citizens to take action on behalf of their home communities.

#### Citations

Bardosh, K., Ryan, S., Welburn, S. and Singer, B. 2018. Addressing vulnerability, building resilience: community-based adaptation to vector-borne diseases in the context of global change. *Infectious Diseases of Poverty* 7:5. Downloaded from <https://idjournal.biomedcentral.com/articles/10.1186/s40249-017-0375-2>

Hotez, P. 2016. Zika is coming. *The New York Times*, April 8. Downloaded from <http://www.nytimes.com/2016/04/09/opinion/zika-is-coming.html? r=1>