

Report

Summit on the *Aedes aegypti* Crisis in the Americas: Joining Together to Address a Grand Challenge

Date: 03/13/2016

Location: Maceio, Alagoas -Brazil

Total attendees: 60-70

Countries in attendance: 8

Hosts: Entomological Society of America (ESA) and Sociedade Entomologica do Brasil (SEB)

Co-chairs: Grayson C. Brown (former ESA President, University of Kentucky) and Luciano Moreira (Instituto Oswaldo Cruz/FIOCRUZ)



Objectives: Identify, discuss, and explore:

- 1- Ways to marshal the international community of entomologists to better control mosquito-borne diseases in the Americas and around the world;
- 2- Areas where more research or knowledge is needed to accomplish effective control;
- 3- Existing and novel technologies as well as implementation approaches for solving the *Aedes aegypti* crisis;
- 4- Communication needs for engaging the public at large in effective, consistent, and lasting control programs.

Report on the summit:

The day started with the introduction to the Grand Challenge, given by **Frank Zalom**, former ESA President and current Professor at the University of California-Davis. Frank talked about partnering with SEB and other associations to collectively find and maintain solutions for the control of *Aedes* in the Americas. The keynote address from **Fabiano Pimenta**, from the Secretaria Municipal de Saude in Belo Horizonte, Brazil, followed, where he talked about the experiences and challenges in *Aedes aegypti* control, from insufficient number of field agents to cover all areas, to operational costs. His presentation was very enlightening, and highlighted the difficulties in implementing control actions and the need to engage the public so that they are our involved in protecting their own health.

The next session was titled “Statement of the problem”, and aimed to review the current state of the crisis in Brazil and surrounding regions, and the implications for the rest of the Americas.



Luciano Moreira, Instituto Oswaldo Cruz

Giovanini Coelho, the coordinator for the National Dengue Control Program (Programa Nacional de Controle da Dengue) in Brazil could not come to the meeting, and Fabiano Pimenta gave his presentation for him. **Carlos Campelo Melo**, National coordinator on Dengue, OPAS/OMS, talked about the response to Zika epidemics and complications. **Luciano Moreira**, from Instituto Oswaldo Cruz in Brazil, and **Grayson Brown**, from the University of Kentucky and former ESA president, and co-Chairs of the summit, introduced the vision for a collaborative model, with a consistent supply of expertise and advocacy. Although the date of the summit coincides with a time where this mosquito has been on the news due to Zika virus, the summit has been in the making for the past two years.

After morning break, the session was titled “Challenge Areas” and featured talks from experts on resistance (**Ademir Martins**, Instituto Oswaldo Cruz), *Wolbachia* (**Stephen Dobson**, University of Kentucky), transgenic mosquitoes (**Margareth Capurro**, University of Sao Paulo, Brazil), and implementation needs (**Mustapha Debboun**, Harris County Public Health and Environmental Services). The main problems in surveillance of this species of mosquito were identified as the fact that it is very labor and time –intensive, and the fact that it utilizes cryptic habitats, besides the presence of insecticide resistance.

During lunch attendees were encouraged to walk through the posters and talk to the authors. Posters presented were:

A new mechanical insecticide for vector control. David Stewart et al, Imerys.

Acoustic larvicide fixed low cost installation for cisterns. Herbert Nyberg, New Mountain Innovations, Inc.

Behavior of *Aedes albopictus* from Rio Caura, Estado Bolivar, Venezuela, against organophosphates. Luisa Elena Figueroa Acosta et al, SAIAES.

Eliminate Dengue Program. Frederico Muzzi et al, Monash University, Brazil.

Long lasting semiochemical behavior manipulation to better control, and automated laser bug sensors to monitor, mosquitoes. Agenor Mafra-Neto et al, ISCA Technologies, Inc.

After lunch attendees chose to attend one of two breakout sessions, the goals of which were to identify gaps, opportunities, and challenges to establish effective *Aedes aegypti* control. Attendees could participate in the session on research needs facilitated by **Chris Stelzig** (ESA) and **Luciano Moreira**, or in the session on implementation needs facilitated by **Grayson Brown**, **Mustapha Debboun**, and me, **Paula Macedo**. Groups were allowed to discuss for 90 minutes on their topics, and facilitators prepared a summary to present to the whole group. Attendees reconvened in the auditorium and listened to reports from each



Chris Stelzig, Luciano Moreira, Grayson Brown, Mustapha Debboun, and Phil Torres

group, with additional questions and discussions moderated by **Phil Torres**, entomologist, television host, and broadcast news reporter. It was interesting to note that, even though the two groups were in separate rooms, they were discussing many of the same points. A very important point made by both groups was regarding the need for a united voice and the use of inter-agency collaboration and partnerships for a common message.

Following the reports from the breakout sessions, a panel of experts and representatives from various non-governmental organizations and government agencies presented their perspectives on issues addressed throughout the day, in a session also moderated by Phil Torres. Panelists were **Roberto Barrera** (US Centers for Disease Control and Prevention, Dengue Branch, San Juan, Puerto Rico), **Angela Harris** (Bill and Melinda Gates Foundation), **COL Jamie Blow** (the United States Armed Forces Pest Management Board), and **Denise Valle** (Instituto Oswaldo Cruz).

After that, a panel composed of **John Pickett**, from the Royal Entomological Society, me-**Paula Macedo**, representing the American Mosquito Control Association, and **Frank Zalom** and **David Gammel**, representing the Entomological Society of America discussed the collaboration between agencies and associations, and a projected plan for the development and implementation of a solution framework. The group discussed resources as a limiting factor, the fact that more could be accomplished through collaboration across disciplines and agencies, and that there needs to be a long-term commitment to ensure sustainability of any proposed program or strategy.



David Gammel, Paula Macedo, John Pickett, Frank Zalom, and Phil Torres

The summit came to an end with an excellent presentation by **Brenda Campos**, from PCI Media Impact, who concluded the summit with strong messages on how to better reach and communicate with our audience, build capacity and work through existing trusted networks, and rely on partnership and collaboration.



Group picture of some of the speakers and attendees at the “Summit on the *Aedes aegypti* Crisis in the Americas”

Post-summit report:

As mentioned above, the summit took place on Sunday, March 13. On the following day, the Congresso Brasileiro e Congresso Latino Americano de Entomologia started in the same location. On the first day there was a symposium on “Mosquito Vectors of Diseases”, moderated by Daniel Albeny Simoes, from Universidade Comunitaria da Regiao de Chapeco, Brazil. The symposium was comprised of five presentations, and a round-table discussion at the end. Daniel Simoes presented on Mosquito Vector Ecology, and highlighted findings of his research on aquatic microcosms, with findings that number of mosquitoes was higher in systems with the presence of predators, and that predation signals attracted mosquitoes and resulted in higher oviposition rates.

Luciano Moreira (FIOCRUZ) talked about *Wolbachia* and findings that its presence in the mosquito blocks the Dengue virus. His laboratory performed vector competence studies of Brazilian mosquitoes with and without *Wolbachia* and determined the absence of Dengue viruses on the head of mosquitoes carrying *Wolbachia*. They have also found that the percentage of mosquitoes infected with Zika is extremely small if mosquitoes also have *Wolbachia*.

Guilherme Trivellato, from Oxitec Brasil, presented on transgenic lineages to suppress mosquito populations, and studies that have been conducted in different areas in Brazil. Rose Gomes Monnerat Solon de Pontes, from EMBRAPA Genetic Resources and Biotechnology, presented on bioinsecticides based on Bti. Margareth Capurro, from University of Sao Paulo, Brazil, presented on the use of sterile males to suppress mosquito populations.

On Tuesday and Wednesday, March 15 and 16, I met with the organizers of the summit to discuss mosquito control and a potential collaboration between their group and AMCA, and with other public health professionals and scientists that were attending the Brazilian meeting. Summit co-chairs and everyone involved were very open to AMCA's participation and very appreciative of my participation in the summit, and would like to include AMCA in the steering committee. The summit was an initial step in the Grand Challenge and an outcome statement has been sent to all participants, with key findings and recommended actions (<https://entomologychallenges.files.wordpress.com/2016/03/outcome-statement-final.pdf>). In my opinion, AMCA's participation will be critical to the success of many of these recommendations. The group seeks to form a steering committee to create a coalition of vector-control-related organizations to advocate for vector control as a critical element of the campaign against *Ae. aegypti*-borne diseases. As a next step in this interaction model and Grand Challenge, the group plans to meet and continue the discussions during the International Congress of Entomology in Florida in September of this year, and AMCA should make sure to remain an integral part of it.

Paula Macedo

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