

2022

World Mosquito
Program

Annual
review

Growing
our
global
impact



World
Mosquito
Program™




NITERÓI
PREFEITURA
EDUCAÇÃO, CULTURA E RECREAÇÃO
PROTEÇÃO AMBIENTAL, SAÚDE E EDUCAÇÃO


NITERÓI
PREFEITURA
EDUCAÇÃO, CULTURA E RECREAÇÃO
PROTEÇÃO AMBIENTAL, SAÚDE E EDUCAÇÃO


NITERÓI
PREFEITURA
EDUCAÇÃO, CULTURA E RECREAÇÃO
PROTEÇÃO AMBIENTAL, SAÚDE E EDUCAÇÃO


World Mosquito Program™
wolbitonobrasil.com.br
21 99643-4805


World Mosquito Program™
wolbitonobrasil.com.br
wmpbrasil 21 99643-4805


World Mosquito Program™
wolbitonobrasil.com.br
wmpbrasil 21 99643-4805

Table of contents

01

Introduction

- 6 Message from the CEO
- 8 Chair's statement
- 10 Our supporters

02

Global impact

- 14 Milestone: 10 million people protected by *Wolbachia*
- 16 Cost-effectiveness of our *Wolbachia* method
- 18 Our evidence for impact

03

Implementation

- 22 Geographical deployment highlights
- 24 Government agreements
- 26 Construction of new insectaries
- 28 Digital learning and knowledge capture

04

Case studies

- 32 A grandmother's hope for a dengue-free world
- 34 Alicinda Tibério: The indigenous leader on empowering her community to combat dengue with WMP
- 36 Santa Cruz grassroots fight against dengue

01

Introduction



n



Message from the CEO

Professor Scott O'Neill



In this last year WMP has reorganised into a subsidiary Australian company of Monash University, World Mosquito Program Ltd, as well as set up further subsidiaries of WMP in France and Brazil. This structural and governance reorganisation has been put in place to help facilitate our ongoing transition from a research focused team into an implementation organisation with a single mission, making the technology we have developed available to the people most in need in tropical countries worldwide.

As the world awakens from the COVID-19 pandemic shutdowns, WMP staff have started travelling to field sites once again, allowing us to increase face-to-face interactions with our partners. It has also been a year of starting to coalesce our workforce, from completely remote arrangements to working from offices and regional hubs again.

We have continued expanding our deployments in existing countries and into new countries in need. In 2023, this activity will become visible with new country projects commencing in Laos, El Salvador and Honduras as well as substantially increased coverage now underway in Indonesia, Vietnam and Brazil. Awareness of the power and positive impact of our technology, as well as its cost-effectiveness, is starting to increase globally with a subsequent increase in enquiries and requests for projects.

The last year has seen key supporters commit to our scaling vision by making available the resources to increase access to our technology. We are extremely grateful to groups like the Bill & Melinda Gates

Foundation, the Gillespie Family Foundation, the Macquarie Group Foundation, the Wellcome Trust and the Silicon Valley Community Foundation for their trust and support through their generous grants and donations. In this last year we have had a number of very generous donations that have given us a strong financial position, which we will use over the next 2-3 years to facilitate massive scaling in 1-2 countries across Latin America and Southeast Asia. These demonstrations will show to the world that our technology can be deployed at the scale required to have major global impact and will serve as a beacon to other countries of what is achievable. In addition, we have been actively establishing partnerships with groups to facilitate our expansion including Innovafeed, Hatch Engineering, Grundfos Pumps Pty Ltd, Save the Children, Reckitt, Médecins sans Frontières and the US CDC.

In 2022 we announced that our technology had now reached more than 10 million people and in so doing it is predicted that we have already averted more than 300,000 dengue cases and more than 20,000 hospitalisations in the areas where the technology has been deployed. These are numbers that make all of us at WMP extremely proud. Indeed, it is the people of WMP through their technical skill, professionalism and huge commitment to our mission who ensure that WMP is associated with the highest quality science foundation and demonstrations of impact. But this is just the start. 2023 is already shaping up to be a major year for WMP as we accelerate to impact globally.

Scott O'Neill
CEO of the World Mosquito Program



Chair's statement

Peter Marshall AM



Since it evolved from the Eliminate Dengue Program in 2017, the World Mosquito Program has gone on to successfully develop its technology to control mosquito-borne diseases around the world by using the natural *Wolbachia* bacteria. The technology is now saving lives as it is progressively deployed worldwide.

This success has meant the challenge of the organisation has moved from research to now deploying the technology as rapidly and as widely as possible, and this has necessitated a reorganisation of the program's structure and governance. Accordingly, World Mosquito Program Ltd (WMP Ltd) was launched in 2022 as a wholly owned subsidiary of Monash University.

WMP Ltd is the start of the latest chapter in the University's long and storied history of delivering impact and social justice worldwide. For more than 60 years, Monash has made a global impact through outstanding education, research, diversity, breadth of alumni, partnerships and connections to create new solutions and better outcomes.

As part of the *Impact 2030* strategic plan, Monash University takes a multidisciplinary and society-wide approach towards fostering thriving communities with programs that drive positive health, economic, social and cultural outcomes locally and globally. WMP Ltd is a great example of the University's commitment to delivering social impact from its research and continuing to redefine what it means to be a university not just by unearthing innovation but also leading the way in its implementation.



In 2022, the World Mosquito Program opened a new, dedicated laboratory at the Clayton campus, capable of producing tens of millions of *Wolbachia*-infected mosquito eggs per week. By August last year, 10 million people worldwide were protected from mosquito-borne diseases because of *Wolbachia*-carrying mosquitoes blocking the viruses that cause diseases like dengue.

With WMP Ltd now operating as a wholly owned Monash University subsidiary, the program has successfully expanded releases across Southern Vietnam, New Caledonia, Brazil and Colombia, announced a new project in Laos and completed releases in Mexico and Sri Lanka.

Monash University can further advance its commitment to delivering Australian innovation to those most in need locally and globally with WMP Ltd now under the University banner. Monash looks forward to catalysing the growth and expansion of WMP Ltd in 2023 and beyond.

INTRODUCTION

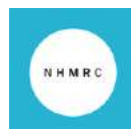
Our supporters

The World Mosquito Program has received generous donations from organisations including government departments, individual foundations and corporations.

Donors include the Department of Foreign Affairs and Trade, the Bill & Melinda Gates Foundation, the US Agency for International Development (USAID), the Gillespie Family Foundation, the Macquarie Group Foundation, the Wellcome Trust, the Silicon Valley Community Foundation, the Planet Wheeler Foundation, the Myer Family Foundation, EY (Ernst & Young), Grundfos Pumps Pty Ltd, Earth Corporation and the Australian National Health and Medical Research Council.

The contributions of these donors have enabled the World Mosquito Program to continue protecting communities around the world from diseases like dengue, Zika, yellow fever and chikungunya. Their continued support will be crucial in bringing this innovative solution to more communities worldwide.

WMP is on a mission to reduce the global burden of mosquito-borne diseases. We invite you to join and partner with us in this critical effort to improve public health around the world. As a valued donor, passionate advocate or dedicated volunteer, your support can have a significant global impact. Please feel free to contact christie.hubbard@worldmosquito.org and join us on our journey towards a dengue-free world. Together, we can make this possible.





02

Global impact



act

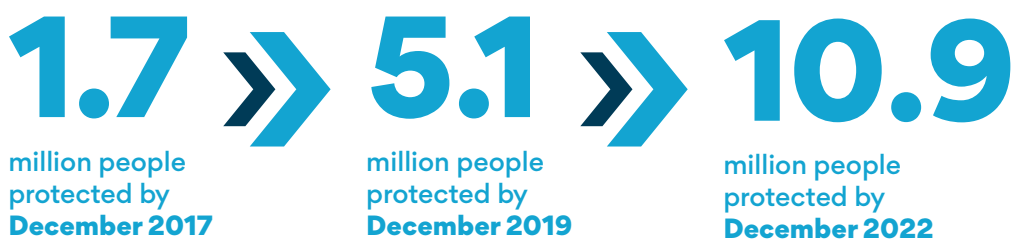


10 million people protected by *Wolbachia*

In 2022, the World Mosquito Program reached a significant milestone of protecting 10 million people in 12 countries living in communities where our *Wolbachia* method is being implemented.



Our global beneficiaries have grown significantly over the past 5 years:



These communities previously experienced regular dengue epidemics, and many also suffered large chikungunya and Zika epidemics in the past decade. On average, 55,000 dengue cases were reported to health authorities each year across these communities before *Wolbachia* releases. However, reported cases are known to substantially underestimate the true disease burden. Data from independent modelling suggest that more than 300,000 cases, including 23,000 hospitalisations, occurred on average each year in these communities that are now protected by *Wolbachia*.

The World Mosquito Program remains focused on its mission of accelerating the effective, safe and equitable scale-up of the *Wolbachia* method to protect communities worldwide from mosquito-borne diseases. Some 4 billion people are living in areas at risk of dengue and other diseases transmitted by *Aedes aegypti* mosquitoes. By 2080, this number is predicted to increase by a further 2 billion.

The 12 countries where the *Wolbachia* method is being implemented constitute one third of the global dengue disease burden, measured in disability-adjusted life years (DALYs) lost. National scale-up of *Wolbachia* deployments in these 12 countries alone could facilitate achievement of the World Health Organization's Neglected Tropical Diseases Roadmap target of a 25% reduction in global dengue disease burden.

References

World Health Organization. (2020). Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical disease 2021-2030.



El Salvador

Cost-effectiveness of our *Wolbachia* method

Previous independent economic evaluations have indicated that the World Mosquito Program's *Wolbachia* method is likely to be cost-saving at a societal level, when deployed at scale into high-density urban areas in Indonesia (Brady et al, *BMC Medicine* 2020) and Fiji (unpublished).

Further evaluations in 2022 have similarly indicated the cost-effectiveness of the *Wolbachia* method in other settings.



Colombia

To support planning for expanded implementation, WMP commissioned 2 independent economic analyses of scaled *Wolbachia* deployments in Colombia – a budget impact analysis and a cost-effectiveness and cost-benefit analysis. Both analyses considered the scenario of *Wolbachia* implementation in 11 dengue-affected cities in Colombia – Cali, Ibagué, Villavicencio, Cúcuta, Bucaramanga, Neiva, Barranquilla, Valledupar, Armenia, Pereira and Cartagena. These cities accounted for one third of Colombia's reported dengue cases between 2010 and 2019.

The budget impact analysis was conducted by health economists at the social enterprise consultancy Sapyens in Medellín, Colombia.

This analysis compared costs and benefits of the current scenario of regular vector control, versus a scenario of *Wolbachia* implementation, from the government's perspective over a 5-year horizon. The economists concluded that although *Wolbachia* implementation in the 11 Colombian cities required an initial financial effort (i.e. negative budget impact in years 1 and 2), it would generate sustained savings in the long term due to the significant reduction in dengue cases. Seven of 11 municipalities were predicted to recover the initial investment within 10 years in direct medical and vector control cost savings, and 3 cities within 5 years.

A cost-effectiveness and cost-benefit analysis conducted by Professor Donald Shepard (Brandeis University, USA) and colleagues at University de los Andes, Colombia, similarly concluded that over 10 years, *Wolbachia* is expected to be highly economically favourable in Colombia. *Wolbachia* was projected to avert sufficient healthcare and vector control costs to offset the costs of deployment, nationally and in 9 of 11 individual cities considered, within 10 years. Taking into account the economic benefits from averted medical costs and illness avoided, the payback period was predicted to be 1.69 years (20 months) nationally and 1.43 years (17 months) in Cali. *Wolbachia* deployment was projected to return US\$5.61 in economic benefits over 10 years for every dollar invested, nationally.

The authors noted several factors that make the results even more favourable, including:

- that benefits are likely to accrue for longer than 10 years
- the cost of the intervention will reduce with scaled deployments
- *Wolbachia* deployments will also protect against outbreaks of chikungunya, Zika and yellow fever.

The cost-effectiveness of *Wolbachia* was considered highly favourable compared to other public health programs evaluated in Colombia, including Sanofi dengue vaccine (Coudeville et al, *Vaccine* 2020), COVID-19 vaccination (Morales-Zamora et al, *Value in Health Regional Issues* 2022) and HPV vaccination (Aponte-Gonzalez et al, *PLoS ONE* 2013).

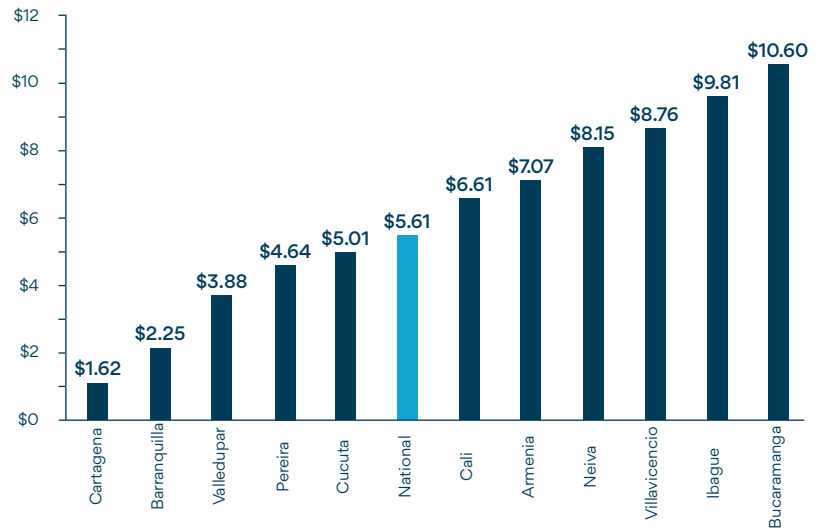


Figure 1: Estimated benefit-cost ratios by city with a 10-year horizon.

Wolbachia deployment is expected to return US\$5.61 in economic benefits over 10 years for every dollar invested, nationally. The benefit-cost ratios exceed 1.0 in all 11 cities, indicating the economic value generated exceeds the costs of *Wolbachia* deployment.

Vietnam

In 2022, WMP also commissioned an economic evaluation of *Wolbachia* deployment in Vietnam, conducted by Dr Hugo Turner, a health economist at Imperial College London. *Wolbachia* deployment in 10 high dengue burden cities in Vietnam was predicted to be highly cost-effective from a health sector perspective, costing US\$420 per disability-adjusted life year (DALY) averted over a 20-year period (Turner et al, *MedRxiv* 2023).

From a societal perspective, the cost-effectiveness ratio was negative, in that the economic benefits outweighed the costs. Even over a 10-year period, *Wolbachia* deployments were still predicted to be cost-effective across most of the cities. The author concluded that targeting high burden cities with *Wolbachia* deployments would be a cost-effective intervention in Vietnam and generate notable broader benefits beyond health gains.

References

- Aponte-González, J., Fajardo-Bernal, L., Diaz, J., Eslava-Schmalbach, J., Gamboa, O. & Hay, J.W. (2013) Cost-Effectiveness Analysis of the Bivalent and Quadrivalent Human Papillomavirus Vaccines from a Societal Perspective in Colombia. *PLoS ONE*, 8(11). doi:10.1371/journal.pone.0080639
- Brady, O.J., Dinar, D.K., Wilastonegoro, N.N., O'Reilly, K.M., Hendrickx, E., Bastos, L.S., Yakob, L. & Shepard, D.S. (2020). The cost-effectiveness of controlling dengue in Indonesia using *wMel Wolbachia* released at scale: a modelling study. *BMC Medicine*, 18(186). doi:10.1186/s12916-020-01638-2
- Coudeville, L. Baurin, N., & Shepard, D.S. (2020). The potential impact of dengue vaccination with, and without, pre-vaccination screening. *Vaccine*, 38(6), 1363-69. doi:10.1016/j.vaccine.2019.12.012
- Morales-Zamora, G., Espinosa, O., Puertas, E., Fernández, J.C., Hernández, J., Zakzuk, V., Cepeda, M., Alvis-Gúzman, N., Castañeda-Orjuela, C. & Paternina-Cacedo, A. (2022). Cost-Effectiveness Analysis of Strategies of COVID-19 Vaccination in Colombia: Comparison of High-Risk Prioritization and No Prioritization Strategies With the Absence of a Vaccination Plan. *Value in Health Regional Issues*, 31, 101-110. doi:10.1016/j.vhri.2022.04.004
- Turner, H.C., Quyen, D.L., Dias, R., Huong, P.T., Simmons, C.P. & Anders, K.L. (2023). An economic evaluation of *Wolbachia* deployments for dengue control in Vietnam. *MedRxiv*. doi:10.1101/2023.02.15.23285965

Our evidence for impact

The efficacy of the *Wolbachia* method for controlling dengue was demonstrated conclusively in a gold-standard cluster randomised trial in Yogyakarta, Indonesia, from 2017-2020. The results, published in the *New England Journal of Medicine* in June 2021, revealed a 77% reduction in dengue cases and an 86% reduction in dengue-related hospitalisations in the *Wolbachia*-treated neighbourhoods, compared to untreated areas (Utarini et al, *The New England Journal of Medicine* 2021). The trial was co-led by the World Mosquito Program and Universitas Gadjah Mada and funded by the Tahija Foundation Indonesia.

Pragmatic studies of the real-world impact of WMP's large-scale *Wolbachia* deployments in Australia, Asia and the Americas have consistently shown that the incidence of reported dengue cases is significantly reduced after deployment. Evidence from Brazil also shows a significant reduction in chikungunya incidence in the *Wolbachia*-treated areas of Rio de Janeiro and Niteroi, compared to untreated areas.

77% reduction in dengue cases



Impact assessment in 2022

In 2022, the global evidence for impact of the *Wolbachia* method was strengthened further.

Colombia

The first results from Colombia showed a significant and sustained reduction in dengue incidence after the establishment of *Wolbachia* throughout the adjacent cities of Bello, Medellín and Itagüí. Covering 3.3 million people in an area of 135km², this represents the largest continuous deployment of the *Wolbachia* method worldwide to date.

Key results included:

- fewer dengue cases notified in Medellín, Bello and Itagüí in 2020-2022 than in any period in the past 20 years
- dengue incidence reduced by 94-97% after *Wolbachia* establishment in the 3 cities, compared to the pre-intervention period.

A causal association between the *Wolbachia* deployments and reduced dengue incidence was supported by the results of a parallel prospective controlled study in Medellín, funded by the Wellcome Trust. This study showed that the incidence of virologically confirmed and presumptive dengue cases presenting to outpatient clinics was significantly lower in 3 *Wolbachia*-treated neighbourhoods than in 3 well-matched untreated neighbourhoods.

94-97%

dengue incidence reduction

Brazil

A study by researchers from the University of Cambridge, collaborating with WMP global and Brazil teams, demonstrated the real-world effectiveness of the *Wolbachia* method in complex urban environments. Published in *The Lancet Infectious Diseases* in 2022, the analysis showed that *Wolbachia* releases in Rio de Janeiro significantly reduced the incidence of dengue and chikungunya within 2 years of releases, even with variable levels of *Wolbachia* across the city (dos Santos et al, *The Lancet Infectious Diseases* 2022).

References

dos Santos, G.R., Durovni, B., Saraceni, V., Riback, T.I.S., Pinto, S.B., Anders, K.L., Moreira, L.A. & Salje, H. (2022). Estimating the effect of the wMel release programme on the incidence of dengue and chikungunya in Rio de Janeiro, Brazil: a spatiotemporal modelling study. *The Lancet Infectious Diseases*. doi:10.1016/S1473-3099(22)00436-4

Indriani, C., Tanamas, S.K., Khasanah, U., Ansari, M.R., Rubangi, Tantowijoyo, W., Ahmad, R.A., Dufault, S.M., Jewell, N.P., Utarini, A., Simmons, C.P. & Anders, K.L. (2023). *Global Health Action*, 16(1). doi: 10.1080/16549716.2023.2166650

Utarini, A., Indriani, C., Ahmad, R.A., Tantowijoyo, W., Arguni, E., Ansari, M.R., Supriyati, E., Wardana, D.S., Meitika, Y., Ernesia, I., Nurhayati, I., Prabowo, E., Andari, B., Green, B.R., Hodgson, L., Cutcher, Z., Rancès, E., Ryan, P.A., O'Neill, S.L., Dufault, S.M., Tanamas, S.K., Jewell, N.P., Anders, K.L. & Simmons, C.P., for the AWED Study Group. (2021). Efficacy of *Wolbachia*-Infected Mosquito Deployments for the Control of Dengue. *The New England Journal of Medicine*, 384(23), 2177-2186. doi:10.1056/NEJMoa2030243

Indonesia

Finally, the broader public health and economic benefits of the *Wolbachia* method were highlighted in our recent publication of a secondary analysis from the Yogyakarta trial. This analysis showed that the frequency of insecticide spraying by vector control teams was reduced by 83% after *Wolbachia* releases, leading to a 40% reduction in vector control spending in the city as a whole (Indriani et al, *Global Health Action* 2023).

Implementa



ation



IMPLEMENTATION

During 2022, the World Mosquito Program surged through the remarkable milestone of having protected 10 million people from mosquito-borne diseases like dengue, Zika, chikungunya and yellow fever. This was achieved from a portfolio of *Wolbachia* deployment projects across Oceania, the Americas and Southeast Asia.

10  million people protected



↑
New Caledonia

Geographical deployment highlights

Oceania

The World Mosquito Program concluded deployments in the most populous areas of the cities of Mont-Dore and Dumbéa in New Caledonia, essentially completing 3 years of work to protect the residents of Grand Nouméa. This city-wide deployment, intensively supported by the national and local governments, was a response to the public health emergencies created by dengue, Zika and chikungunya outbreaks in the past decade.



Americas

The World Mosquito Program continued to scale in the Americas. In Brazil, we deployed *Wolbachia* in Petrolina and Campo Grande in collaboration with the local municipalities.

In Colombia, long-term monitoring confirmed city-wide *Wolbachia* establishment through the Aburrá Valley, confirming protection to 2.5 million people. In the city of Cali, we established *Wolbachia* using mixed deployment methods. These included mosquito release containers hosted by households and adult mosquitoes released from tubes by staff on motorbikes.

Excitingly, the World Mosquito Program also piloted mosquito releases using automated release mechanisms, carried by a drone and a small vehicle driving through the community. These pilot studies have given us valuable information to help with planning large, city-wide deployments in the future.

Asia

In partnership with Institut Pasteur and Action on Poverty, the World Mosquito Program successfully completed *Wolbachia* deployments to protect approximately 260,000 people in the cities of Thu Dau Mot and My Tho in Vietnam. These deployments complemented our previous work in Khanh Hoa province, central Vietnam.

In Laos, we made preparations for *Wolbachia* deployments in Vientiane, in partnership with the Ministry of Health and Save the Children International.

In Indonesia, deployments were completed in the Bantul district of Yogyakarta, bringing an end to nearly a decade of work to protect 2 million people in Yogyakarta province. Also in Indonesia, we secured government-level approvals for *Wolbachia* deployments on the island of Bali.



Government agreements

↓ Indonesia



Agreements with Balinese Government

In November 2022, the World Mosquito Program signed agreements with the Governor of Bali and the Head of the Bali Provincial Health Office for the province's first phase of *Wolbachia* deployments. The first phase, which covers Buleleng Regency and some areas of Denpasar City, is supported by the Department of Foreign Affairs and Trade and the Gillespie Family Foundation.

The aim of the project is to protect the entire island of Bali in 4 phases. Although funding for subsequent steps is not yet available, the Balinese Government – including the National Parliament (especially Commission IX, which oversees the health and human workforce) – is keen to assess the feasibility of using its budget for the remaining phases.



4

phases to protect the entire island of Bali



Agreement with Indonesian Ministry of Health

In December 2022, the World Mosquito Program signed an agreement with the Indonesian Ministry of Health regarding the use of *Wolbachia* technology in additional areas of Indonesia. Deployments will start with pilot implementation in 5 cities – Semarang, Jakarta Barat, Bandung, Kupang and Bontang.

The World Mosquito Program aims to support the Government of Indonesia to further expand *Wolbachia* deployments by offering existing digital tools, including access to our digital learning and knowledge capture platform. We are also exploring a possible joint venture to build a mass mosquito production facility, which would ensure a sufficient supply of high-quality *Wolbachia* mosquito eggs. We are continuing discussions with the Ministry of Health and Commission IX of the Indonesian Parliament to review this possibility.



IMPLEMENTATION

Construction of new insectaries

In 2022, the World Mosquito Program's new insectaries received regulatory certification for use with domestic and imported mosquitoes. Designed to produce 15-20 million *Wolbachia* mosquito eggs per week, the insectaries are currently producing eggs for upcoming releases in Laos and Australia using high-throughput mass rearing methods.

The PC2 and PC3 biosecurity insectaries were constructed over 10 months at Monash University's Clayton campus, with a \$15 million investment from the University. The facility was certified for use with domestic mosquitoes in May 2022 and with imported mosquitoes at the end of 2022. It is the largest biosecurity insectary in the state of Victoria, and it is among the largest biosecurity insectaries across Australia.



15-20

million eggs produced per week



Aedes aegypti
mosquitoes



The 800 sq m facility comprises 4 separate insectaries, which incorporate:

- 14 controlled temperature and humidity rooms for rearing aquatic stages and adult mosquitoes
- preparation rooms for egg hatching, larvae counting and capsule preparation
- a quality assurance/quality control (QA/QC) room
- a laboratory for product development and microinjection
- storage facilities
- cold rooms for waste and sample storage
- a fully equipped washing room.

The insectaries also incorporate state-of-the-art facilities for new product development activities, including mosquito egg encapsulation and drone release mechanism optimisation.

The new insectaries are highly secure and fully sealed, with features designed to maximise mosquito containment. Containment measures include:

- access through 3 airlocks
- measures to filter and treat liquid waste
- BG traps (mosquito traps)
- air curtains
- interlocking doors
- insect-proof vents.

The Building Automation System monitors the facility 24/7 and controls room pressure, humidity, temperature, water decontamination systems, lighting and carbon dioxide levels.

The facility comprises a BIC2 certified insectary (Physical Containment Level 2), which means it meets the necessary standards for the World Mosquito Program's mass production activities. The facility also includes a large BIC3 (Biosecurity Insectary Containment Level 3) insectary. This insectary has 3 rearing rooms that can be used for work with viruses and level 3 pathogens.

\$15M

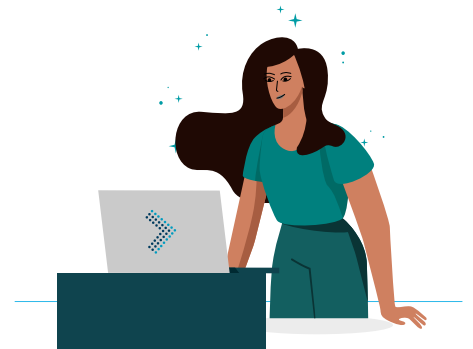
investment

IMPLEMENTATION

Digital learning and knowledge capture

The World Mosquito Program has developed a digital learning and knowledge capture platform, called Catalyst. Catalyst's purpose is to provide high-quality learning experiences to the WMP workforce so they obtain the knowledge, skills and abilities to effectively implement *Wolbachia* technologies at scale.

Throughout 2022, we continued progressing the platform and its offerings towards its objectives according to the following 3 pillars.



Brazil

1 Curation of relevant core learning experiences

The Learning Design Solutions (LDS) team are the custodians of Catalyst. In 2022, the LDS team leveraged new rapid authoring tools and translation processes to deliver more engaging and accessible content. Through close collaboration with functional areas, the team scoped, developed and began the build of digital learning content around Communications, Community Engagement and Field Entomology. This content will be launched to Catalyst users in early 2023.



2 Fostering thriving online communities of practice

In 2022, the World Mosquito Program recruited a new Learning Engagement Coordinator and launched a new engagement strategy for Catalyst. A pilot implementation of this strategy led to a tripling of active and engaged Catalyst users and a new pathway to drive user-generated content and innovation capture.

3 Catalyst as the central source of knowledge and best practices

Through curation and content development processes, Catalyst has remained the source of WMP best practices. Maintaining this and streamlining these processes is a focus for ongoing work in 2023.



Case studie



S



CASE STUDIES

A grandmother's hope for a dengue-free world

“My granddaughter was really too young when she got it, so the whole family was very anxious.”

No one wants to watch their loved ones suffer the fever, rash, nausea and body aches that often accompany dengue. But seeing a child suffer can be particularly gut-wrenching.

In the past few years, Nguyen Thi Den has helped to care for not one, but 3, sick family members – including her 2 grandchildren.

“Three people in my family got it,” Den recalls. “My daughter and granddaughter got it first, then around half a month later my grandson, who was in secondary school, got it too.”

Den and her family live in Thu Dau Mot, a small but thriving urban centre in Southern Vietnam. Almost half of all Vietnam's dengue cases are recorded in Den's home region. But hundreds of thousands more cases go undetected.

When her daughter and granddaughter contracted dengue, the family's world was turned upside down. Not only was Den's daughter battling the illness herself, she was also trying to care for her young child, with the support of her mother and extended family.

“After one week in the hospital, my granddaughter's health seemed to have deteriorated a lot.”

Anyone can experience the more serious symptoms of dengue. But children, particularly those under the age of 5, are at a greater risk of severe dengue illness. Den's granddaughter thankfully recovered – but the experience left a mark on the family.



Thu Dau Mot welcomes *Wolbachia*

Traditional methods of mosquito control such as spraying pesticides, burning incense and removing bodies of water were not doing enough to stop mosquito-borne outbreaks. But in May 2022, Thu Dau Mot and My Tho, another city in Southern Vietnam, welcomed *Wolbachia*, the World Mosquito Program's groundbreaking solution to dengue.

Communities have embraced the solution, excited for a future where they don't have to fear their children ending up in hospital. Many community members volunteered to host mosquito release containers and helped WMP staff find suitable and safe places for them. The releases concluded in October 2022.

“I think it has made a significant impact,” says Ngan Thi Ngoc Le, a resident of Thu Dau Mot. “It will be wonderful if there is no dengue.”



“

She was too young,
so we were worried sick.”

—
NGUYEN THI DEN

CASE STUDIES

Alicinda Tibério: The indigenous leader on empowering her community to combat dengue with WMP

Alicinda Tibério remembers the impact of dengue like it was yesterday. “The symptoms are dreadful,” she says. The indigenous leader of the Água Bonita Urban Village, in Campo Grande, west central Brazil, was in bed for almost 15 days when she was diagnosed with dengue following a blood test.

“There is a lot of fever and headache, and it drains you out pretty fast. I lost a lot of weight,” says Tibério, who was surprised a mosquito could take that much “strength out of your body.”

In Água Bonita, unpaved roads lead to brick houses, a small church and a school. Many of its residents work in construction, fish farming or agriculture. Despite its close proximity to the state capital of Campo Grande, the village is largely unknown, yet indigenous traditions, culture and a vibrant community spirit can be found here.

Brazil’s indigenous population includes almost 900,000 people, with over 305 ethnicities and 274 languages. Like many indigenous communities across the globe, indigenous populations in Brazil have been displaced in recent years, forcing them to move closer to urban centres, where they are more prone to mosquito-borne diseases.





Brazil
↓

“

Some people were afraid, but I told them not to fear because this would be beneficial to the community.”

ALICINDA TIBÉRIO

“Here in Brazil, we have different realities when we talk about indigenous communities,” says Luciano Andrade Moreira, Head of WMP’s operations in Brazil. “Villages are often close to city centres, and this creates many challenges, whether it is maintaining traditions or people’s health.”

The World Mosquito Program (WMP) has been working with a number of indigenous communities in Brazil to combat mosquito-borne diseases.

“It’s paramount to explain what WMP’s *Wolbachia* method is, but even more important that everyone understands why mosquitoes with *Wolbachia* should be released in the territories,” adds Moreira.

“We encounter cultural and even language barriers. In Aldeia Água Bonita, we have indigenous peoples of different ethnicities. We are always careful to engage in dialogue and provide information. We recently had information on the method in both

Guarani and Terena, languages of indigenous peoples here in Brazil. We want to bring health to everyone.”

Tibério says the decision to accept the *Wolbachia* method was quick once people were aware of the benefits and knew it was a practical way to tackle dengue in the community.

“I always keep in mind I do not make decisions for myself; I make them for my people,” she notes. “It is very rewarding that they accepted. My people and I embraced the *Wolbachia* method. My duty is with what is best for the community.”

CASE STUDIES

Santa Cruz grassroots fight against dengue



↑
Colombia

Since 2016, the World Mosquito Program (WMP) has worked extensively with local communities in Medellín to reduce the burden of mosquito-borne diseases. A focus of our social inclusion policy is to engage marginalised community members. To drive that collaboration, our team in Medellín launched a new initiative at the grassroots level for schools, churches and libraries.

The team collaborated with the Santa Cruz Library in Medellín to organise a series of workshops for the Different Reading Club, so those with disabilities could access information about dengue and other diseases.

Sandra Valencia, Service Manager at the library, recalls: “Including people with disabilities in the WMP workshops helps us as a community to fight against mosquito-borne diseases; they will share what they learned here with their families and caregivers.”

“What we were seeking was for them to learn about the symptoms of dengue fever first. This is important as most of the group members spend a lot of time alone, and recognising the symptoms is vital so that, if they do get sick, they can ask for help from their relatives and the medical service.”

SANDRA VALENCIA

One such service user is Rogelio Zapata. He says: “Just because I can’t see, it doesn’t mean I can’t learn new things, like this *Wolbachia* method.”

“I am fascinated by how nature can help us fight these diseases and soon, thanks to Wolbachia, we will not have so many people sick with dengue, Zika or chikungunya.”

ROGELIO ZAPATA

WMP is engaging with communities, local health authorities and non-government organisations to help protect them from mosquito-borne diseases.

Alan Mee, our Director, Community Engagement, says: “Community engagement is at the heart of what we do and to be successful we need as diverse input as possible. Gender equality, disability and social inclusion (GEDSI) considerations are among the most important in public health

program implementation today, because public health outcomes are shaped by both biological and social factors.”

Through programs like a Different Reading Club, we aim to empower women and people with disabilities, by promoting and protecting their human rights and advancing social inclusion considerations. Programs like these ensure all members of the community can actively participate in information events and volunteer, which is a key part of community success.

In other parts of the world, we are launching similar initiatives and providing opportunities for groups to assist in public health outcomes in their communities. This drives forward our vision of a world where everyone can live a healthy life, free from the fear and suffering caused by disease.



↑
Colombia



contact@worldmosquito.org
www.worldmosquitoprogram.org

12 Innovation Walk
Monash University Clayton
Victoria 3800 Australia