Torres Strait Island
REGIONAL COUNCIL

Housing and Safe & Healthy Communities Committee Meeting

Agenda

Date:	10 October 2023
Time:	10.00am to 12.00nn
Venue:	VMR 8 - 0299 165 402 Guest PIN: 6905#

Time		Agenda Item
10.00am	1.	Welcome & Quorum Confirmation (Chair)
	2.	Opening Prayer
	3.	Attendance / Apologies
	4.	Conflict of Interest (COI) - Declarable/Prescribed
	5.	Confirmation of Draft Minutes of the Committee Meeting held on 8 June 2023
	6.	Action Items from Previous Meeting
10.20am	7.	COMMUNITY SERVICES: "Deadly for Diabetes" *(verbal update)*
10.55am	8.	ENGINEERING SERVICES: HS Radios
11.15am	9.	STANDING AGENDA ITEM - HEALTH MATTERS (Chairperson) • Hammond Health Centre • RN for UGAR • Asbestos concerns within Communities • Major Infrastructures
11.25am	10.	STANDING AGENDA ITEM - ANIMAL MANAGEMENT MATTERS (Manager Environment and Health) • Unfenced/feral horses (St Pauls/Kubin Communities and Badu) • Animal Management – Feral Dogs and Cats

11.00am 11. DEPUTATION: JCU Healthy Ageing Research Team

Discussion Topic: Strong Communities Strong Health Project

Deputation Lead Speaker: Dr Eddie Strivens

Other Deputation Attendees: Torres Webb

TSIRC Executive Responsible for Deputation (Community Services)

11.30am 12. DEPUTATION: CSIRO

Discussion Topic: Torres Strait Health and Biosecurity Mosquito Project

Deputation Lead Speaker: Dr Brendan Trewin

Other Deputation Attendees: Torres Webb

TSIRC Executive Responsible for Deputation (Community Services)

Background Information:

i. Summary of Community Conversations during 2022 (in which TSIRC was first briefed)

ii. Information provided to GBK in March 2023

11.55am 13. General / Other Business (on notice)

12.00nn 14. Next Meeting Date: **30 November 2023**

12.05pm 15. Closing Remarks & Prayer

Torres Strait Island
REGIONAL COUNCIL

Housing and Safe & Healthy Communities Committee Meeting

Minutes

Date:	8 June 2023
Time:	10.00am to 12.00nn
Venue:	(VC) VMR 8 – 0299 165 402 #Guest PIN 6905

1. Welcome (Chair)

Cr Keith Fell opened the meeting at 10.10am and welcomed Committee Members and TSIRC staff. The Chairperson also gave respectful acknowledgements to honor both Torres Strait Islander and Aboriginal peoples and their connection to Country.

2. Opening Prayer

Cr Francis Pearson provided the opening prayer.

3. Attendance / Apologies

The following attendances were noted:

Committee Members	
Chairperson	Cr Keith Fell
Member	Cr Francis Pearson
Member	Cr John Levi*

TSIRC Officers	
Head of Community Services	Mr Dawson Sailor
Executive Director - Building Services	Mr Wayne Green
Executive Director – Engineering Services	Mr David Baldwin *(joined the meeting at 11.45am)*
TSIRC Secretariat	Mr Darryl Brooks

**Cr Levi excused himself from Committee deliberations between 10.10am to 10.25am for Sorry Business purposes.*

4. Conflict of Interest (COI) – Declarable/Prescribed

The Chairperson requested that members make any relevant conflict of interest declarations and advise if any relevant legal proceedings were current pertaining to Committee business to be considered at the meeting. No declarations were made.

5. Noting of Ratified Minutes of the HSHC Committee Meeting held on 2 February 2023

RESOLUTION:

Moved: Cr Francis Pearson *Seconded: Cr Keith Fell*

The Committee noted that the Minutes of the HSHC Committee Meeting held on 2 February 2023 were ratified at the February 2023 Council Meeting.

MOTION CARRIED UNANIMOUSLY

6. Action Items from Previous Meeting

The Committee noted the updates provided on action items from the February 2023 meeting.

7. COMMUNITY SERVICES: Community Services Update

Mr Dawson Sailor (Head of Community Services) provided the Committee an update on the following matters:

- Housing Team
  - Currently finalising a review of policies and procedures for the Housing Plan.
  - Housing Officers may be attending a workshop on Thursday Island during the w/b 12 June 2023.
- Environmental Health Team
  - Will be attending the annual workshop in Cherbourg.
- Health and Wellbeing Team
  - IKCs
  - Draft Domestic and Family Violence Action Plan
- 2023 Island of Origin Rugby League Carnival (16-18 June 2023 – Badu Island)
  - Council supported the event through grant funding from Department of Tourism, Innovation and Sport (DTIS)
- November 2023 Council Workshop
  - Confirmation that Regional Managers and Divisional Managers will be attending.

8. COMMUNITY SERVICES: Draft Domestic and Family Violence Action Plan (late paper)

Mr Dawson Sailor (Head of Community Services) spoke to this paper.

The Committee noted that the current statistics available may only be scratching the surface to the current levels of actual domestic and family violence incidences. The Committee also noted that responsible agencies in the Torres Strait region are neglecting the community on this issue.

RESOLUTION:

Moved: Cr John Levi *Seconded: Cr Keith Fell*

The Committee noted that the Draft Domestic and Family Violence Action Plan is due to be presented to the July 2023 Council Meeting.

MOTION CARRIED UNANIMOUSLY

9. HOUSING MATTERS

The Executive Director Engineering Services and the Head of Community Services provided the committee with verbal updates on the following:

- $13m Regional Rent Arrears
  - tenants to be encouraged onto payment plans
- Regional Housing Strategy
  - consultation to be finalized before the end of 2023
- Abandoned Homes
  - Identified and initial conversation for a resolution through housing consultation
- Blue Phone
  - a workshop with be held on Thursday Island in the w/b 12 June 2023 where discussion on the Blue Phone along with the Housing Investment Plan will be held with key stakeholders

- Healthy Home Program (Badu)
  - 2/3 July 2023 will be the last of the inspections to occur in the current scheduling, with 10-12 houses outstanding for auditing.
  - ED Building Services and the Head of Community Services have been meeting regularly with the Queensland Departments of Health and Housing.
  - Fence replacement requests are now coming through.
  - Final close-out is currently scheduled for December 2023, however there is scope that may happen by 30 September 2023.
  - ED Building Services and Head of Community Services supported proposal for 2 admin traineeships

10. HEALTH MATTERS

The Executive Director Building Services and the Head of Community Services provided the committee with verbal updates on the following:

- Hammond Health Centre
  - the delays around this issue have now been too long

ACTION:

Committee Chair (Cr Keith Fell) to raise the matter with Mayor Mosby and CEO if a letter to the new Health Minister is appropriate considering update from June SARG meeting by Mayor Mosby.

- RN for Ugar
  - still operating on a part-time basis (visits on Tuesdays and Thursdays from the position located on Erub, depending on weather conditions).
- Asbestos concerns within Communities
  - This is a major issue. The ED Building Services and the Chief Executive Officer met with the Department of Environment and Science (funding providers for CHAS). The Department is keen to help fund the closure study and design for Erub and potentially an audit on asbestos across the Torres Strait Islands.
- Major Infrastructures

ACTION:

The following issues to remain as standing items for updates at future Committee meetings until further notice:

- Hammond Health Centre
- RN for Ugar
- Asbestos concerns within Communities
- Major Infrastructures

11. ANIMAL MANAGEMENT MATTERS

The Chairperson requested updates on the following:

- Major ongoing concerns within St Pauls and Badu communities in relation to feral/unfenced horses
  - fears that people may be hurt by the animals
  - urgent need to address the number of horses - through targeted sterilization programs as a short-term solution, followed up with longer-term solutions
  - numerous attempts have been made to engage with the PBC to negotiate fencing-off arrangements on the Kubin side and the St Pauls PBC have also not responded to numerous requests made by Cr John Levi to also help resolve the issue
  - the Committee recommends the establishment of a working group of relevant community representatives and State Government representatives to advise on a way forward on this issue, including an approach to the State Government for fencing support
  - Head of Community Services and the Manager Environment and Health to discuss further and provide an update at the next Committee meeting
  - Manager Environment and Health to attend future Committee meetings, until advised further, to provide updates on progress in relation to this issue
- Regional Dogs and Cats Issues (feral)
  - TSIRC is not aware of feral cat and dog numbers in the region.
  - Head of Community Services to seek advice from the TSRA in relation to feral animal data or monitoring programs
  - Manager Environment and Health to attend future Committee meetings, until advised further, to provide updates in relation to this issue

ACTION:

Manager Environment and Health to attend future Committee meetings, until advised further, to provide updates on:

- progress in relation to address unfenced/feral horses in the region (Badu, St Pauls and Kubin communities); and
- updates/strategies in relation to feral cats and dogs in the region.

12. SPORTS & RECREATION MATTERS

The Chairperson requested updates on the following:

- Sporting facilities not safe for communities to use
  - Community Services to conduct an audit of sporting facilities in the region, including an assessment of these facilities in relation to WHS issues
  - these facilities need to be in functioning order for communities to address obesity and other health related issues, as well as other community activities
- HLOs - Funding & Hours
  no increase to the current hours (20hrs per week), however the initial funding for the position for 12 months has now been increased to 2 years

13. SAFE COMMUNITIES MATTERS

The Executive Director Engineering Services (David Baldwin) joined the meeting at 11.45am to speak to this item.

The Committee was provided an update on efforts to manage and maintain the approximate $1.5b asset management responsibilities of the TSIRC.

- Water Issues
  - ISIC program ($51m)
  - Mix 6 (3 ½ years)
  - Water storage on Saibai ($2m)
  - new water tank on Poruma
  - desalination tank on Mabuiag
  - Nest of tanks
  - Dauan $2.9m
  - Erub reservoir - $1.7m
  - Badu - $700K to fix
  - Other communities (Mabuiag, Yam, Murray, Hammond and Warraber have approximately $30m of outstanding need
- MIF7
  - recently attended a meeting (observer capacity only) with the TSIRC Mayor and GK.
- Marine
  - will meet with MSQ on 8 June 2023 and will provide an update at the next Council meeting on the outcomes of that meeting.
  - currently the Harbour Master and the District Director of TMR are due to visit Yam and have now visited Kubin, Boigu, Badu and Saibai to look at transport infrastructure. Visits to Erub, Masig and Warraber are also planned.
- Airstrips
  - proceeding along nicely
  - $2.9m for Masig next financial year

14. General / Other Business (on notice)

A. HS Radios

Executive Director Engineering Services to provide an update at the next Committee meeting on the operational status of HS Radios across the TSIRC footprint.

ACTION:

Executive Director Engineering Services to provide an update at the next Committee meeting on the operational status of HS Radios throughout the TSIRC footprint.

15. Next Meeting Date: 28 September 2023

The Committee noted the next meeting date of 28 September 2023.

The Chairperson closed the meeting at 12.05pm and Cr John Levi delivered the closing prayer.

……
Mr James William
Chief Executive Officer
Torres Strait Island Regional Council
Date:

……
Cr. Phillemon Mosby
Mayor
Torres Strait Island Regional Council
Date:

HSHC COMMITTEE MEETING ACTION ITEMS

Actions Arising from June 2023 Meeting

Agenda Item	Action	Action Area	Current Status
AI 10 Health Matters	1. <u>Hammond Island Health Centre</u> Committee Chair (Cr Keith Fell) to raise the matter with Mayor Mosby and CEO if a letter to the new Health Minister is appropriate considering update from June SARG meeting by Mayor Mosby. 2. <u>Standing Agenda Items</u> The following issues to remain as standing items for updates at future Committee meetings until further notice: • Hammond Health Centre • RN for Ugar • Asbestos concerns within Communities • Major Infrastructures	1. Chairperson 2. Secretariat	2. Completed
AI 11 Animal Management Matters	Manager Environment and Health to attend future Committee meetings, until advised further, to provide updates on: • progress in relation to address unfenced/feral horses in the region (Badu, St Pauls and Kubin communities); and • updates/strategies in relation to feral cats and dogs in the region.	Manager Environment and Health	On agenda for October 2023 Meeting.
AI 14 General / Other Business	<u>HS Radios</u> Executive Director Engineering Services to provide an update at the next Committee meeting on the operational status of HS Radios throughout the TSIRC footprint.	ED Engineering Services	

Outstanding Actions from Previous Meetings

Agenda Item	Action	Action Area	Current Status
Feb 2023 AI 6	That the Committee put this subject of blue phone process to SARG with a draft scope to recommend to full Council.	Community Services/ED Building Services	Discussed at May 2023 TSIRC Workshop and will be discussed further at the Community Services/BSU Workshop on 13 June 2023.

* * *

Torres Strait Invasive Mosquito Suppression

Development of community engagement strategy to enable next generation mosquito population control technologies

Dr Brendan Trewin

Torres Webb

Yellow fever mosquito

Asian tiger mosquito

Health and Biosecurity Business Unit

Australia's National Science Agency

CSIRO

Australia's national science agency

One of the world's largest multidisciplinary science and technology organisations

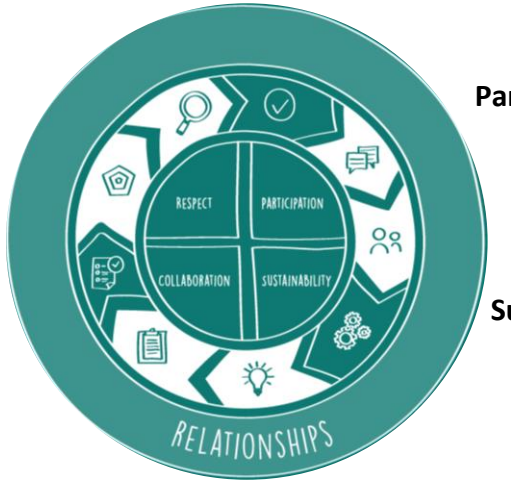
5,200+ dedicated people working across 58 sites globally

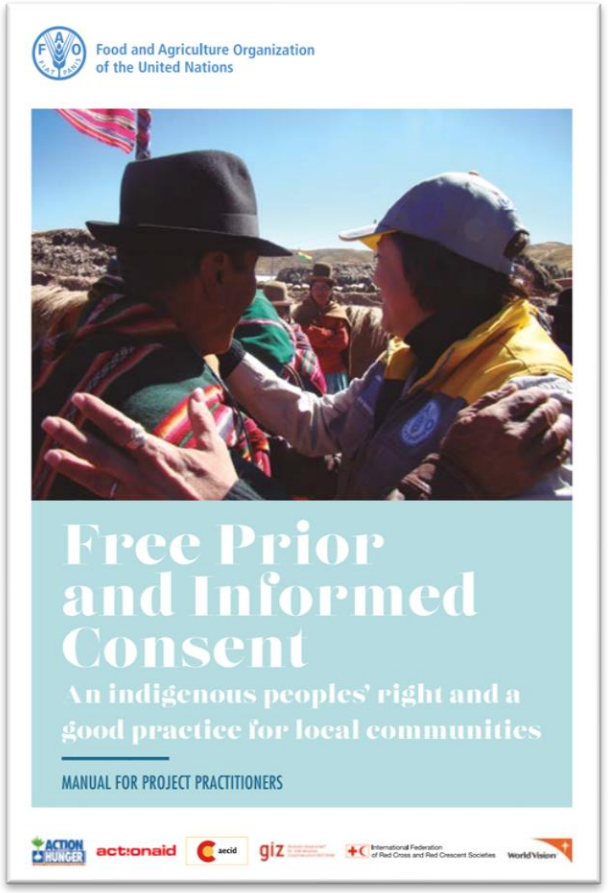
Purpose since 1926: To solve the greatest challenges through innovative science and technology

Now:
Designing our programs to benefit industry and the welfare of Australian communities

FPIC: Free Prior and Informed Consent

UN Declaration on the Rights of Indigenous Peoples



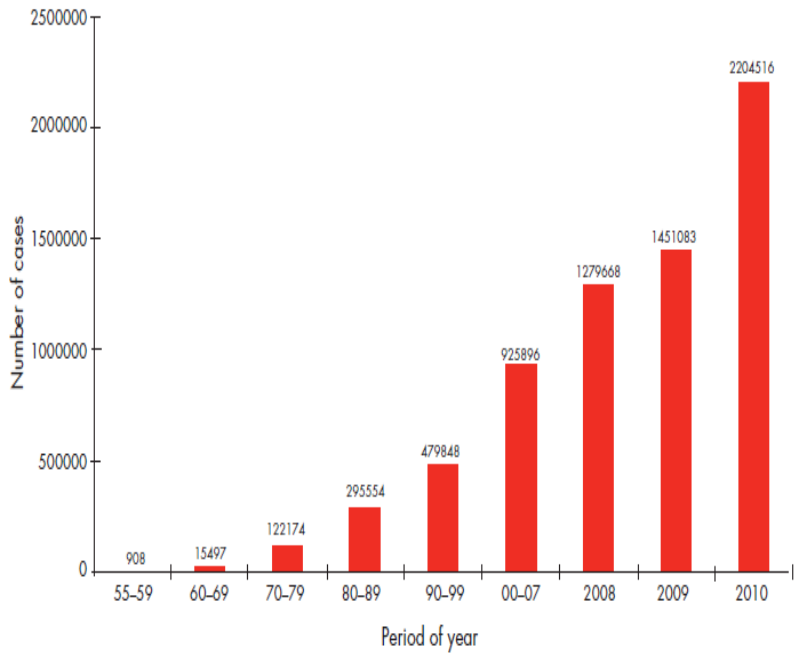


- Free, Prior Informed Consent (FPIC) refers to a right of peoples to consent, on a free and informed basis, to development that takes place on their country or seas, may affect them or the lands on which they live.
- FPIC is the highest standard within the development sector and is common across Indigenous engagements globally.
- The Native Title Act 1993 is an Australian law that recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs.
- An FPIC approach to engagement with the Traditional Owners of Zenadth Kes is critical for the proposed Invasive Mosquito Suppression Program.

The Problem

Rapid rise in epidemic viral diseases spread by invasive mosquitoes

Dengue cases
Source: WHO



5.2 million cases

2019

The Era of Epidemic Dengue

- 300x increase in dengue since 1960s

Due to:

- Spread of invasive disease vectors
- Rapid urbanization (habitat/food)
- Trade and human movement (spread)
- Climate change (conditions)

Traditional tools are failing

- Insecticide resistance
- Impacts on the environment

Dengue in the Torres Strait

Dengue fever

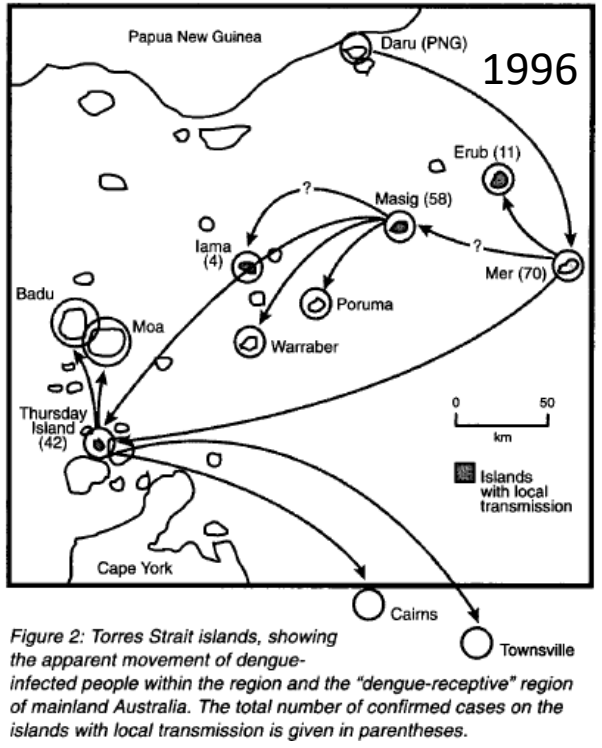
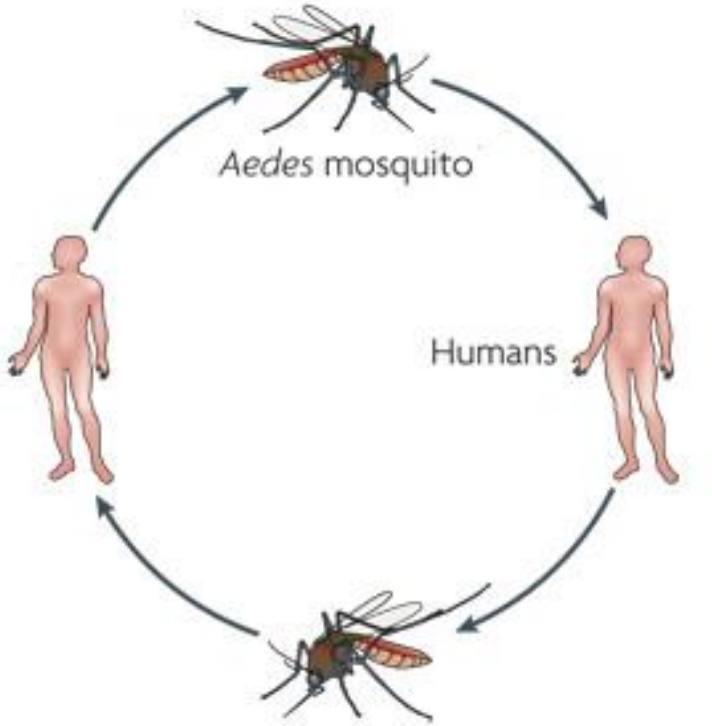
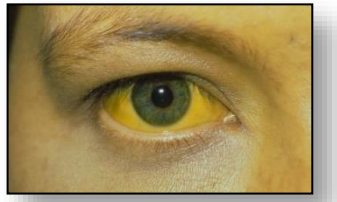


Figure 2: Torres Strait islands, showing the apparent movement of dengue-infected people within the region and the "dengue-receptive" region of mainland Australia. The total number of confirmed cases on the islands with local transmission is given in parentheses.

Dengue in the Torres Strait



The dengue fever cycle



Yellow fever

Chikungunya

Zika

Other potential diseases

Dengue in the Torres Strait

- Earliest known epidemics of dengue occurred in 1912
- Dengue returned to Torres Strait in 1996 (201 cases)
- 2002 – 2003 outbreak (276 cases)
- Dengue outbreaks 2016-2017 – Erub, Badu and Masig
- Resulting from tourism and human movement cross-border with PNG

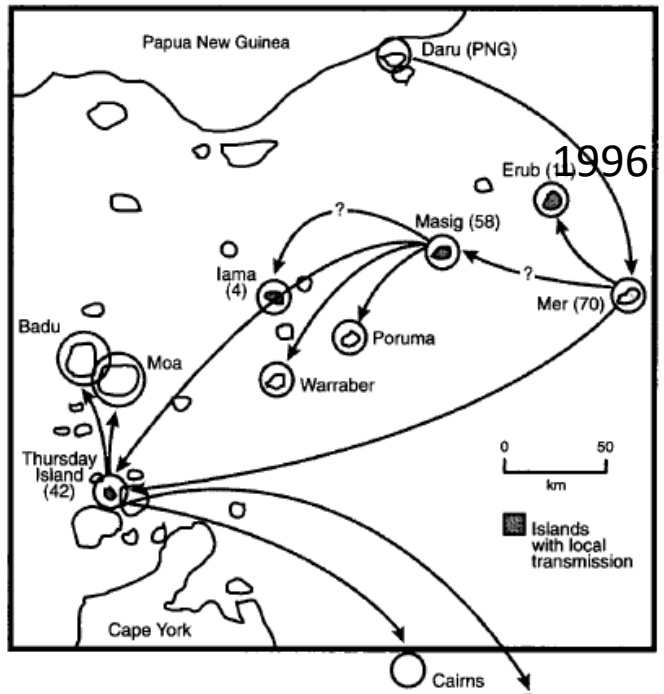


Figure 2: Torres Strait islands, showing the apparent movement of dengue-infected people within the region and the "dengue-receptive" region of mainland Australia. The total number of confirmed cases on the islands with local transmission is given in parentheses.

The Invasive Mosquitoes

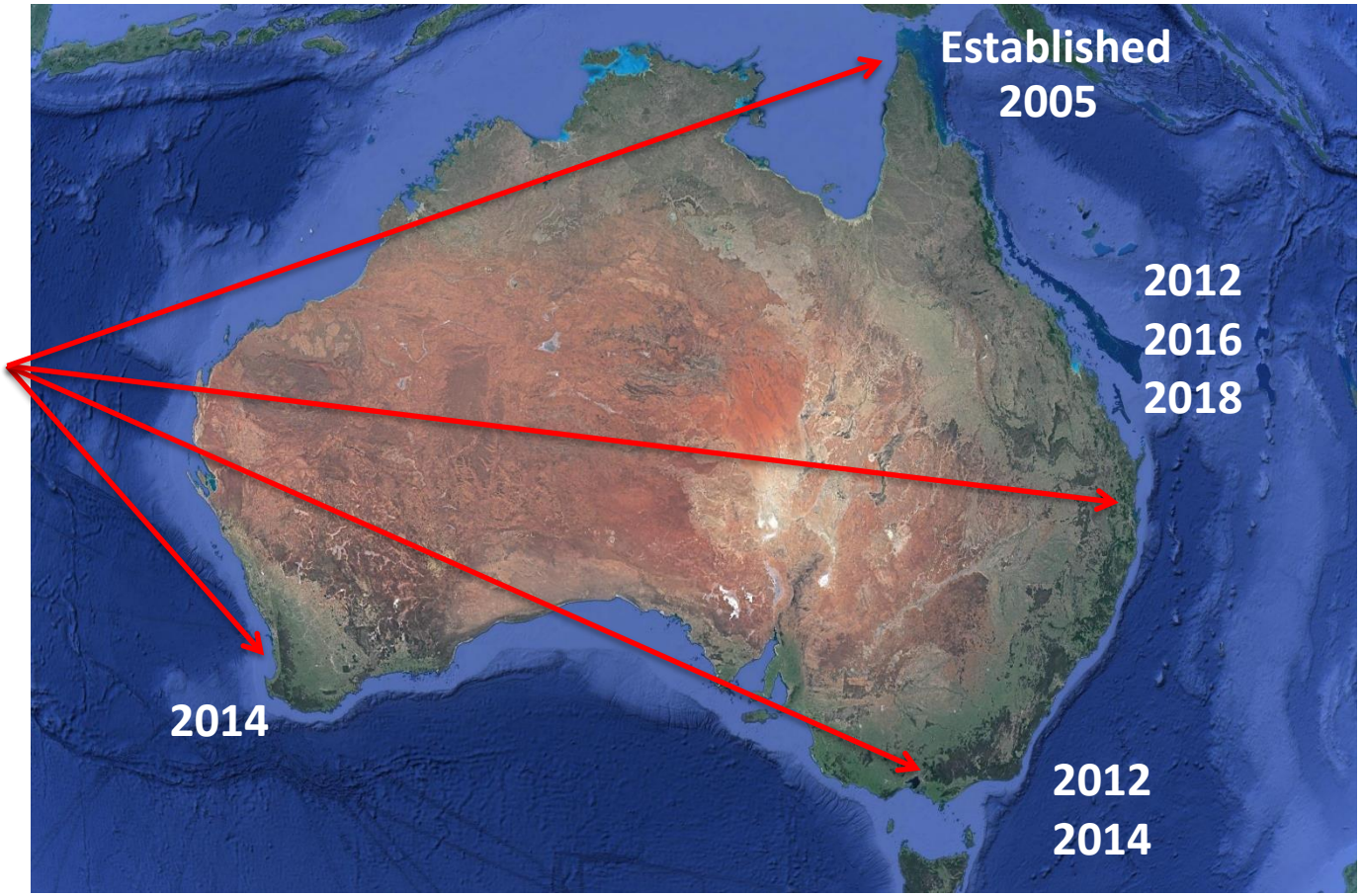
Asian tiger mosquito
(Aedes albopictus)

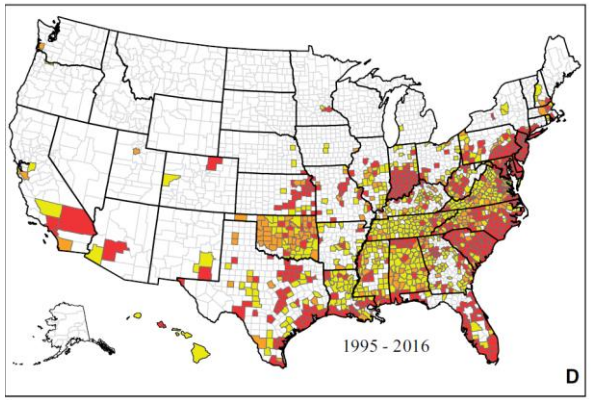
Yellow fever mosquito
(Aedes aegypti)

The Asian Tiger Mosquito

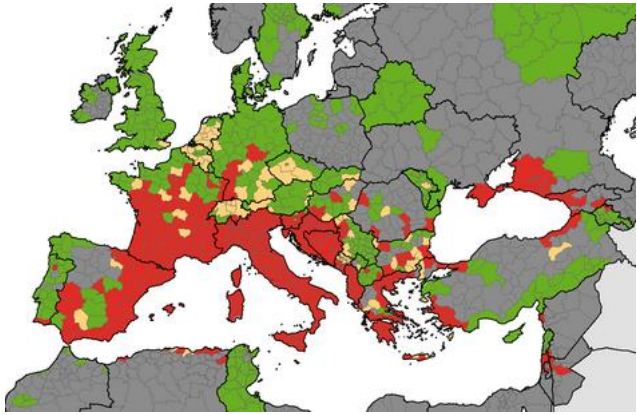
The most invasive mosquito species across the world

Detections at Sea Ports





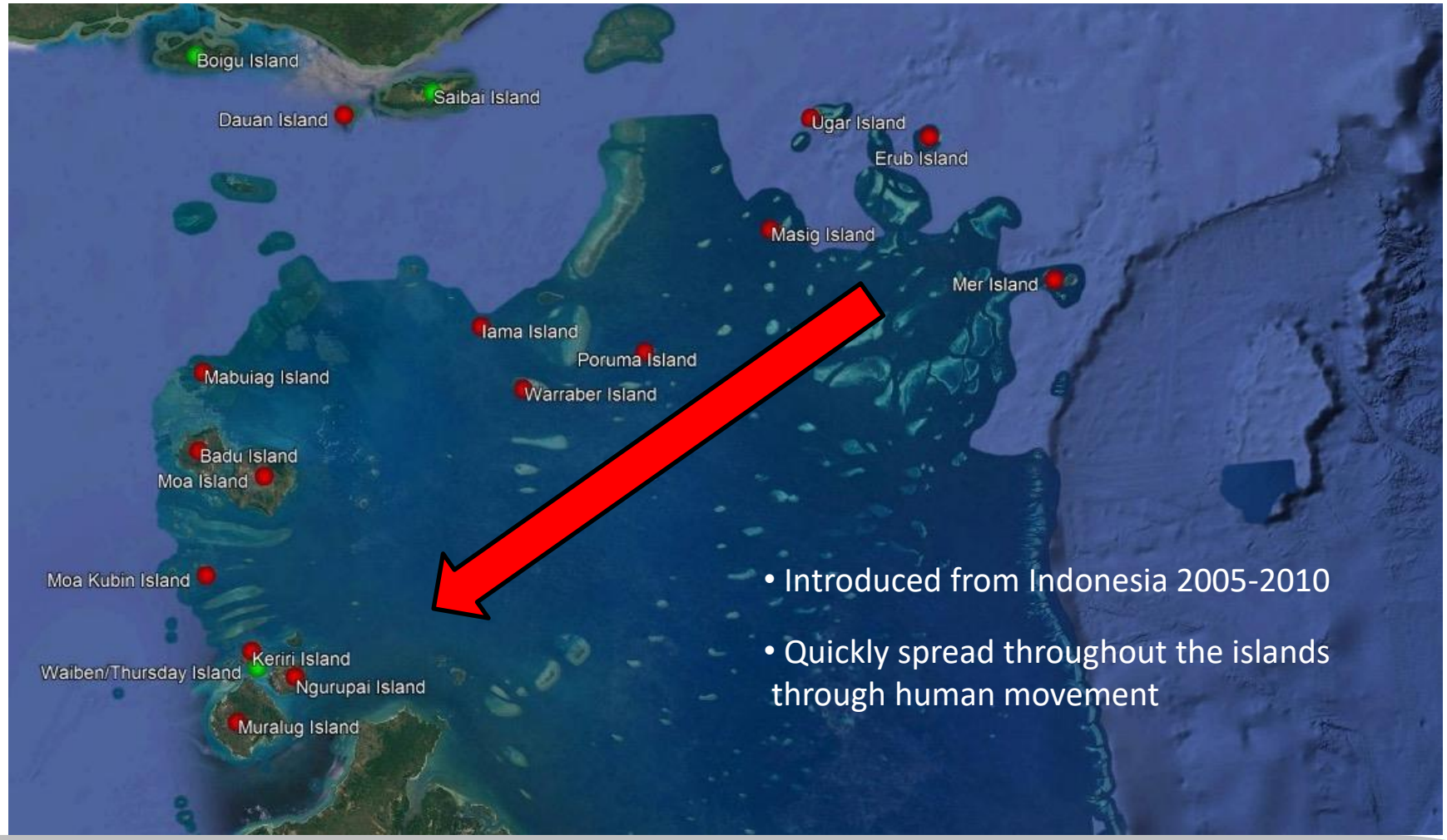
Texas 1985



Italy 1990

The Asian Tiger Mosquito

The most invasive mosquito species across the world



The Asian Tiger Mosquito

The most invasive mosquito species across the world

- **Basic Biology:**
  - Females bite! Protein for egg production, spread disease
  - Eggs survive >1 year

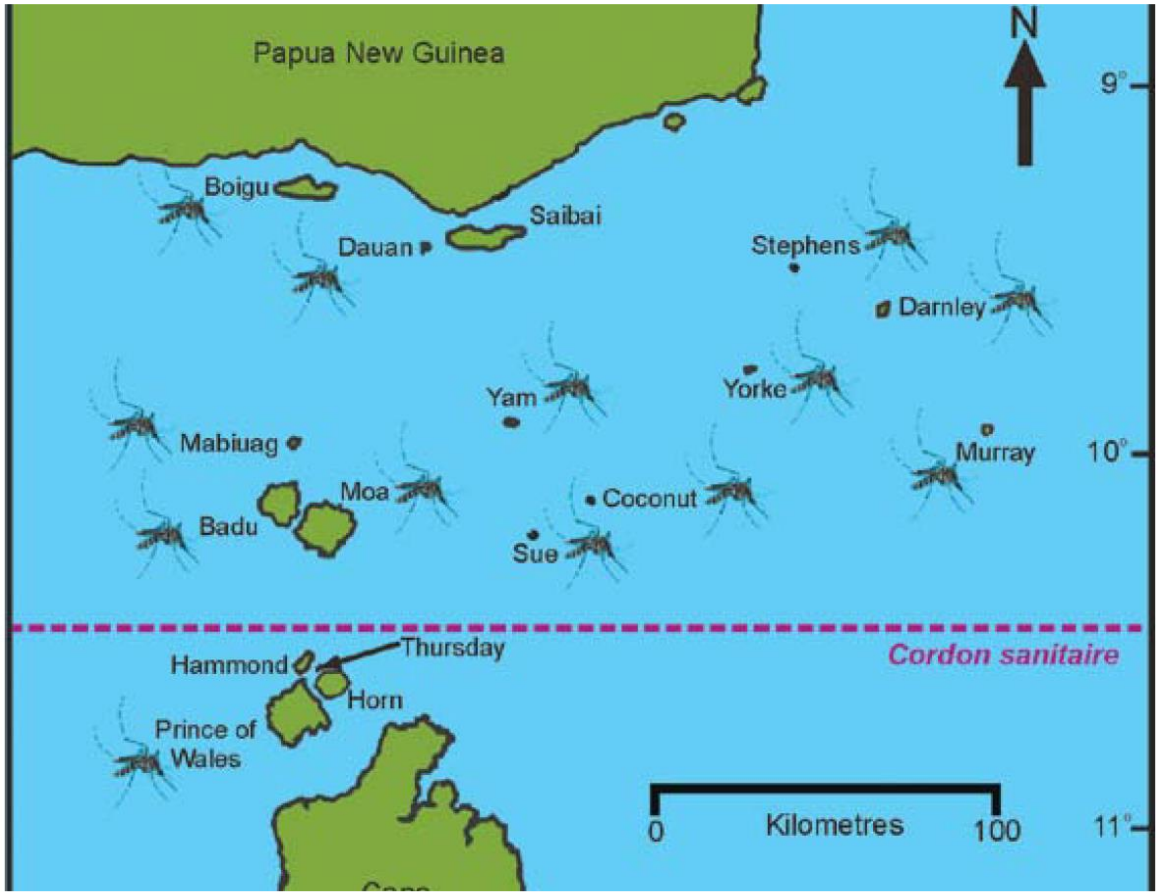
Dengue fever

  - Urban and forest areas
  - Bites during the day

Chikungunya

- Primary mosquito capable of spreading Chikungunya
- Spreads dengue in the Torres Strait

How are invasive mosquitoes currently managed?



Timeline:

2005 - Eradication campaign (AAEP) begins
- QLD Health advisory group formed
- Control focused on larval habitat

2008 – Cordon sanitaire begins, focus on keeping the Asian tiger mosquito from southern islands

How are invasive mosquitoes currently managed?

Fig 2. Harborage spraying using a vehicle-mounted unit to control *Ae. albopictus* on Thursday Island.

2010 – Asian tiger mosquito discovered on Waiben and Ngurupai

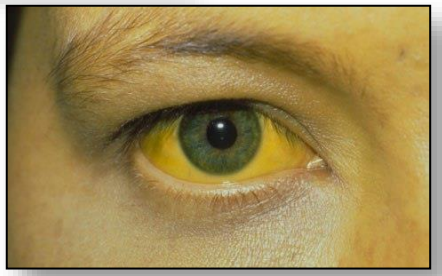
- **Cordon sanitaire changes from exclusion to population suppression and prevention of spread**

2011 – Larval control is supplemented by barrier sprays of vegetation around urban environments

2016 – Successful removal of the Asian tiger mosquito from Waiben

Yellow fever mosquito

Dengue fever



Yellow fever

Chikungunya

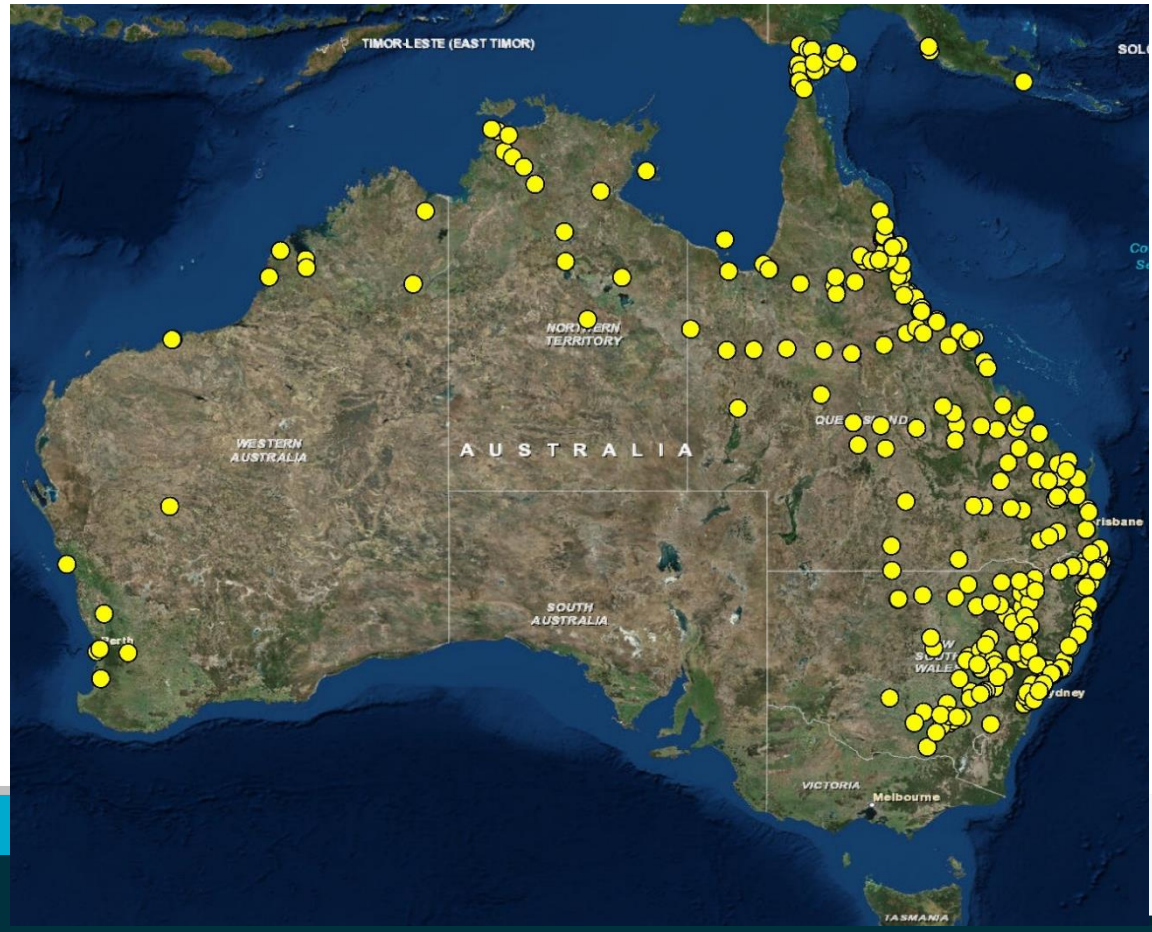
Zika

The Yellow Fever Mosquito

Basic Biology:

- Introduced during European settlement
- Feeds almost entirely on humans (repeatedly)
- Urban areas only
- Backyards in Waiben and Boigu!

- Replaced by the Asian tiger mosquito
- Still responsible for dengue
- Potential to spread throughout the Torres Strait

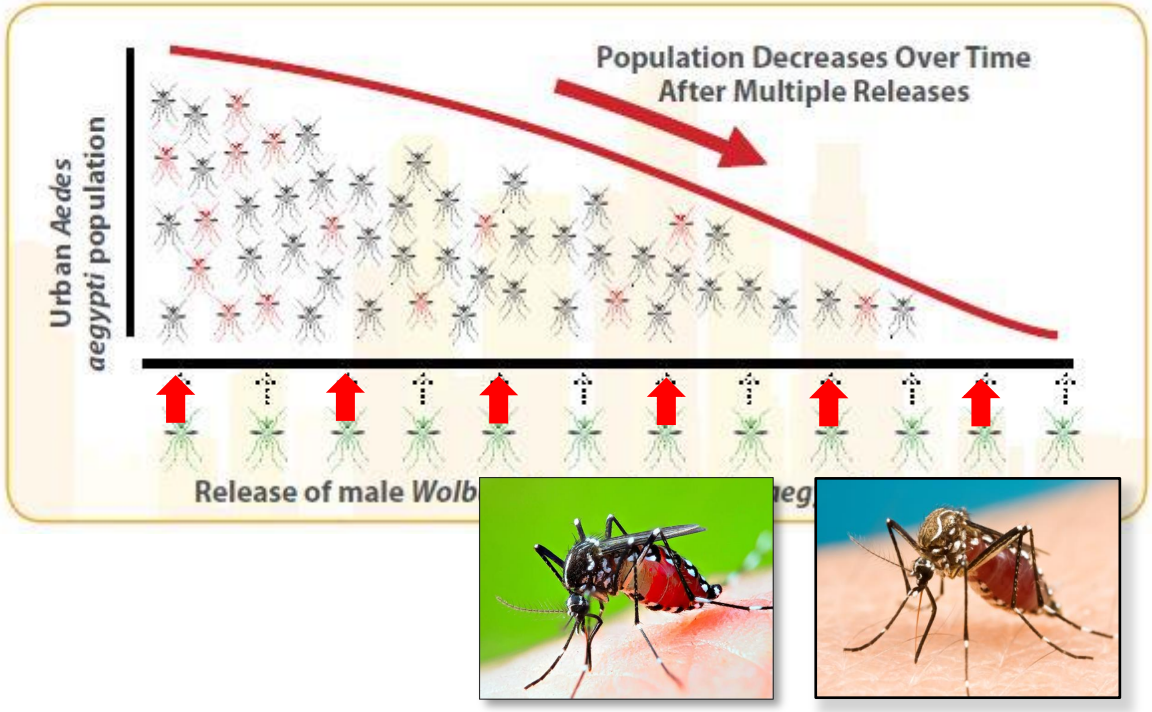


Potential Solutions: Suppression of Invasive Mosquitoes: CSIRO “Good Bugs”

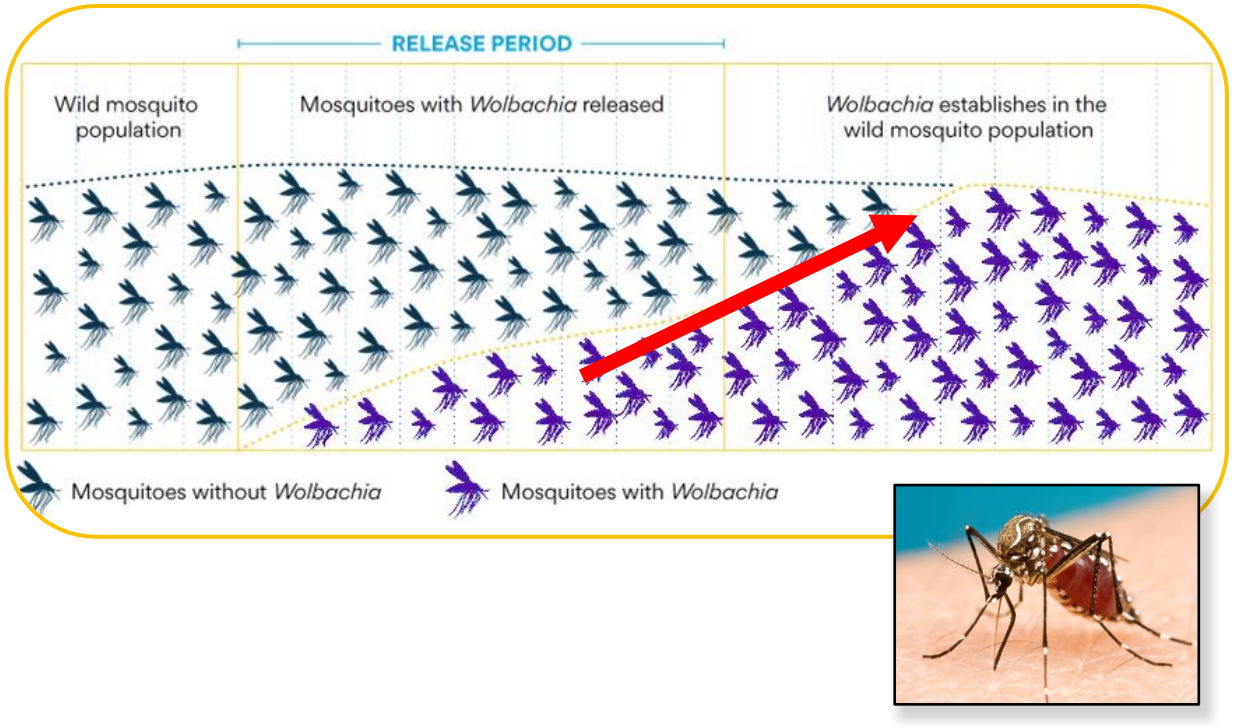
- Our mosquitoes are safe, non-toxic, 100% environmentally friendly
- Targeted to the species – no impact
- More scalable and effective than pesticides long term
- Not capable of spreading disease
- Efficacy of each solution varies depending on the goals of application

Potential Solutions: Suppression of Invasive Mosquitoes: CSIRO “Good Bugs”

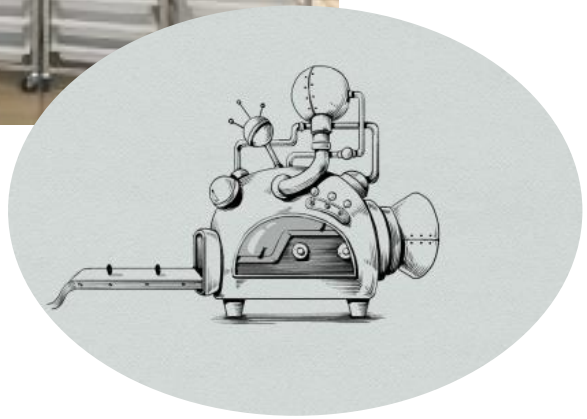
Population Suppression



Population Replacement



Good Bugs: An Environmentally Friendly Solution



Mosquito Mass-rearing Facility

Release Method

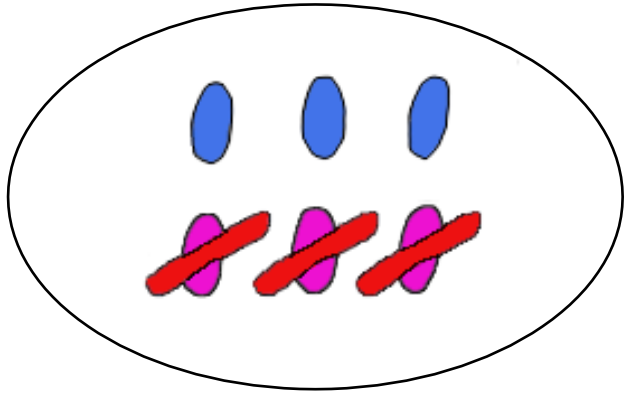
Population Suppression:

Technology #1 “Self Limiting Mosquito System”

Asian tiger mosquito

Benefits of Self Limiting System:

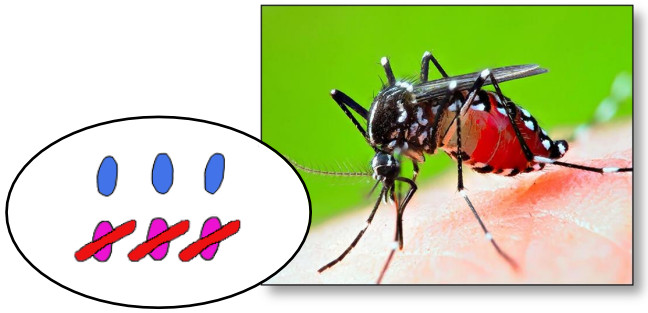
- Only **non-biting, sterile males** are released by egg
- Does involve **genetic engineering**



Technology #1
“Self Limiting Mosquito System”

Population Suppression:

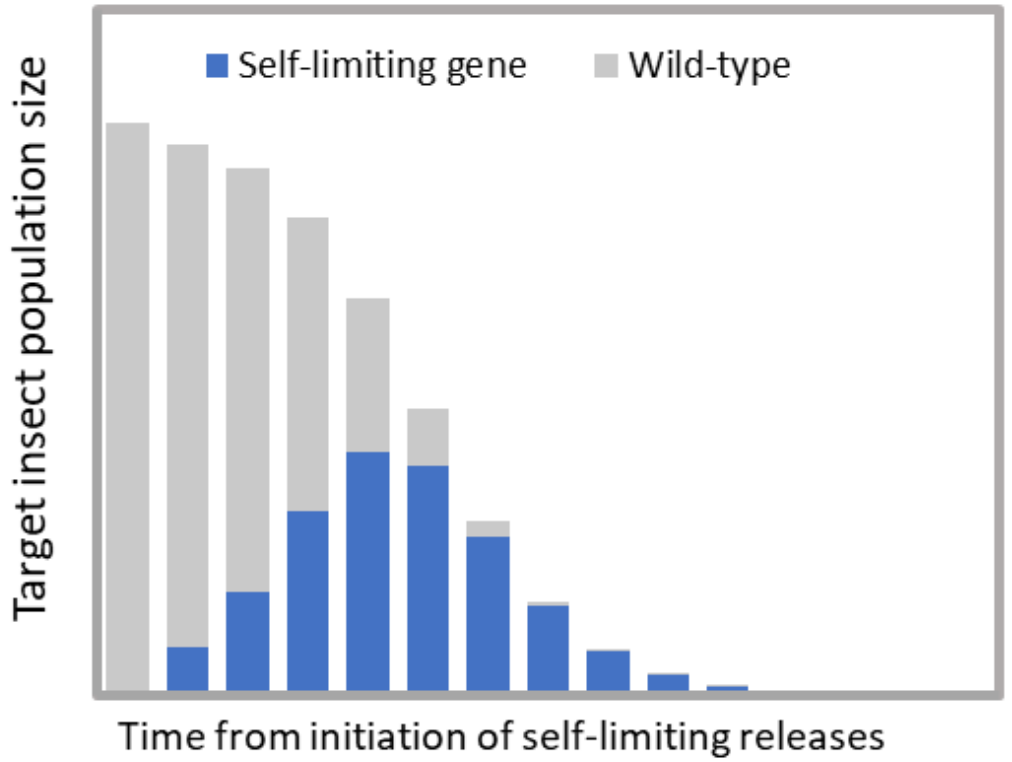
Technology #1 “Self Limiting Mosquito System”



Asian tiger mosquito

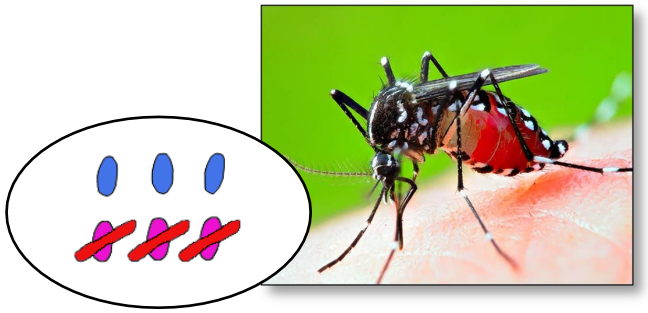
Benefits of Self Limiting System:

- Only **non-biting, sterile males** are released by egg
- Does involve **genetic engineering**
- Reversible, multi-generational, does not persist after releases stop
- Scalable, can treat the **entire Torres Strait** area



Population Suppression:

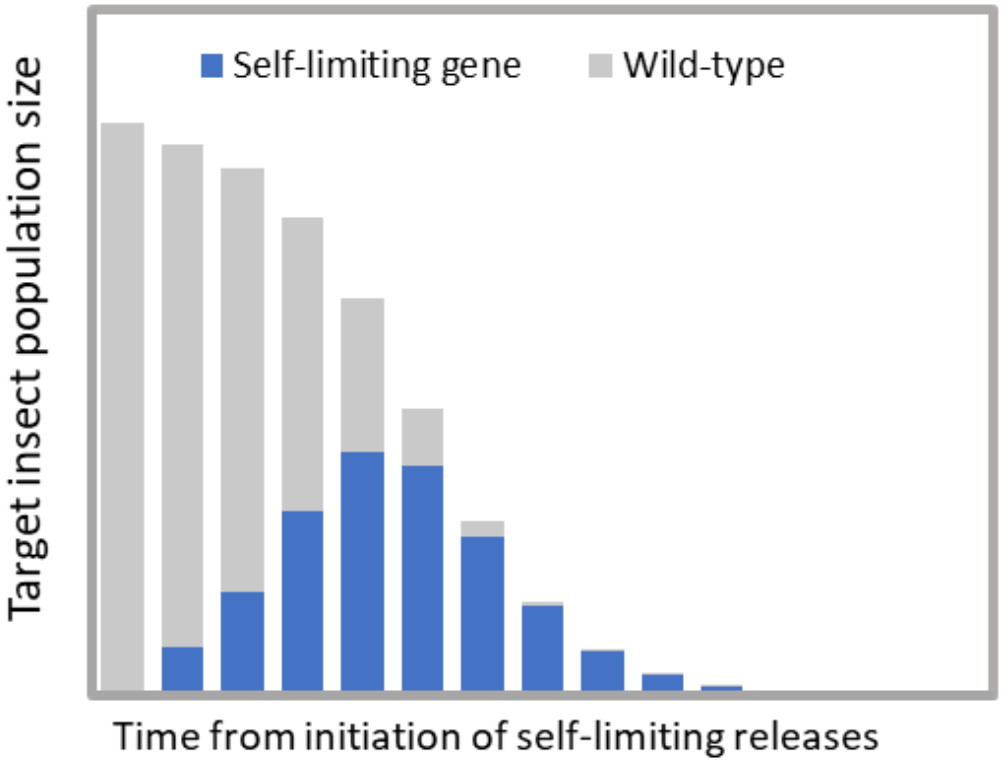
Technology #1“Self Limiting Mosquito System”



Asian tiger mosquito

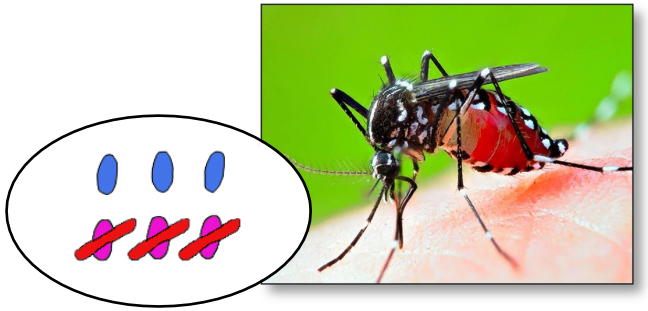
Benefits of Self Limiting System:

- Technology has **been around for 20 years**
- **Example: system EPA approved** in United States of America; Brazil, Africa, Malaysia, Panama
- Possible to **achieve elimination** throughout an island system like the Torres Strait



Population Suppression:

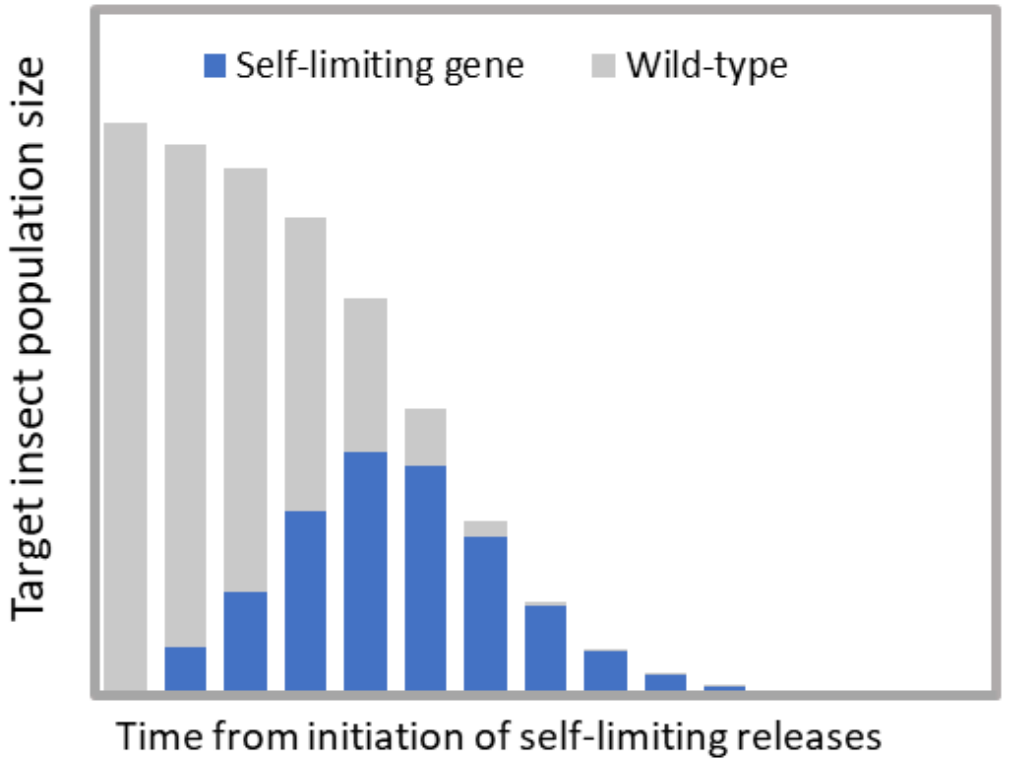
Technology #1“Self Limiting Mosquito System”



Asian tiger mosquito

Considerations of Self Limiting System:

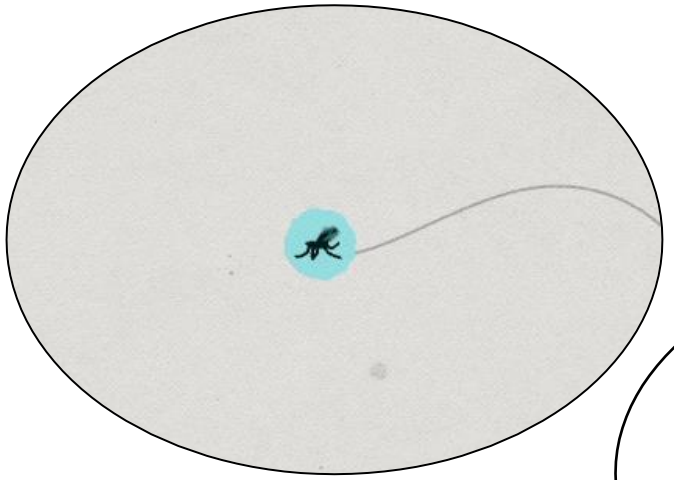
- High **regulatory standards** for approval
- **Maintaining mosquito facilities** requires high standards
- Potential for increased **activist attention** due to novel genetic engineering system



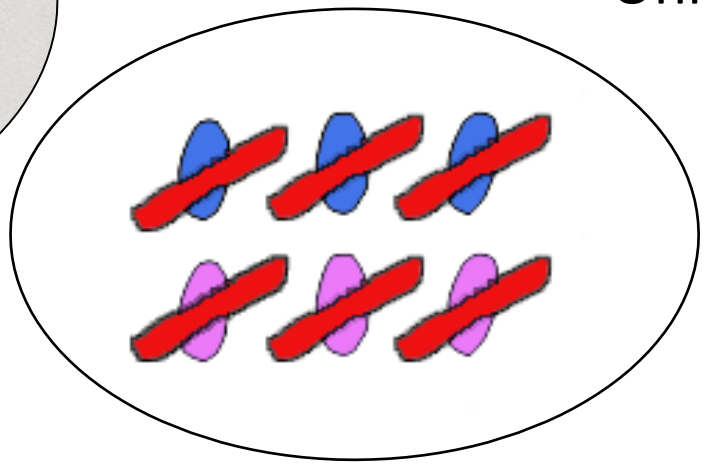
Population Suppression:

Technology #2 “CSIRO *Wolbachia* Sterile Insect System”

Yellow fever mosquito



- **2018: CSIRO first to prove effectiveness** of the technology

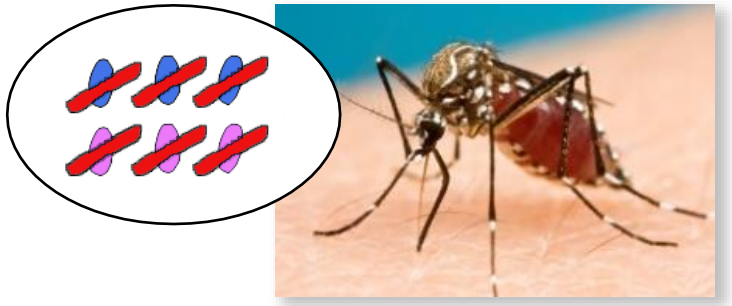


Technology #2
“CSIRO *Wolbachia* Sterile Insect System”

The Biology:

- Only **non-biting, sterile males** are released
- **No eggs hatch** from matings from released males and wild females
  - **Suitable for small populations** of invasive mosquitoes in TI

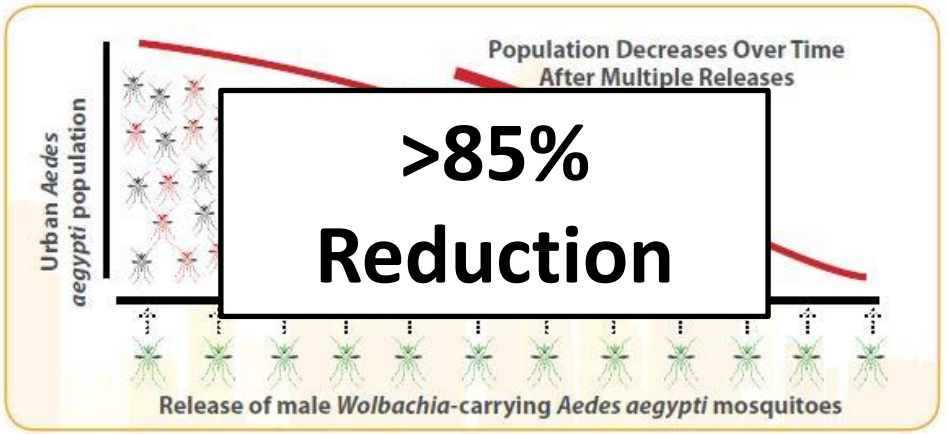
Technology #2 CSIRO Sterile Insect System



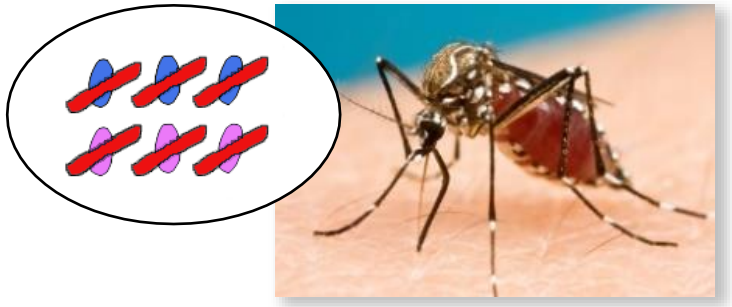
Yellow fever mosquito

Benefits: *Wolbachia* Sterile Insect Method:

- Applies a **sterility found in nature**
- Technology **mature, proven and effective**
- CSIRO are **world experts** in this method
- **Technology transferred** to Indigenous business



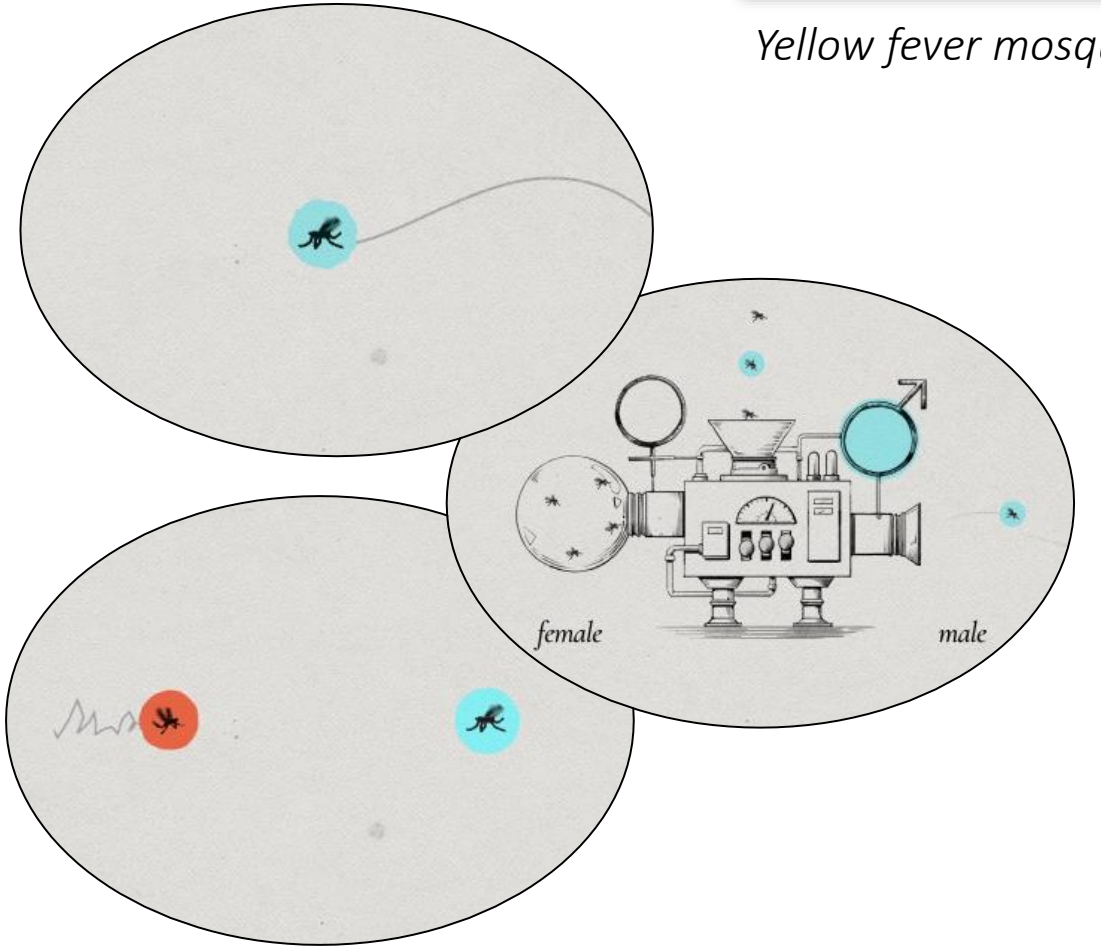
Technology #2 CSIRO Sterile Insect System



Yellow fever mosquito

Considerations: *Wolbachia* Sterile Insect Method:

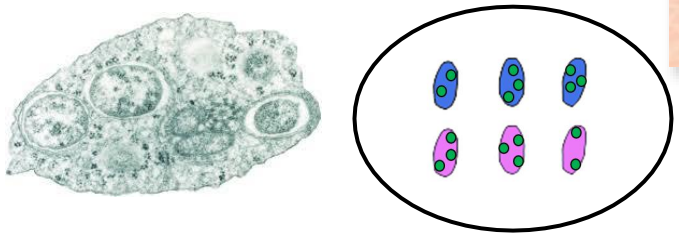
- **Releasing females** mosquitoes with *Wolbachia* can cause the method to fail
- Requires the **release of adults**
- Reliant upon **complex hardware and software**
- Proven only on **small areas**

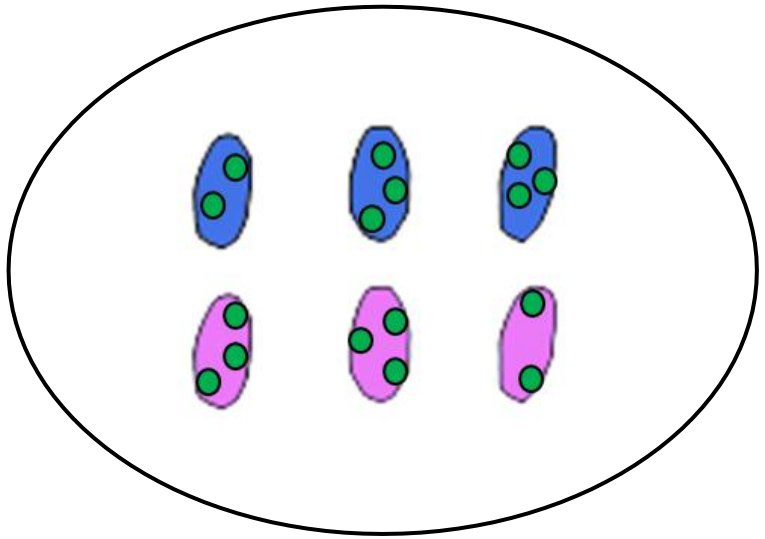


Technology #3 Population Replacement

"*Wolbachia* Population Replacement Method"

Yellow fever mosquito





Technology #3
"*Wolbachia* Population Replacement Method"

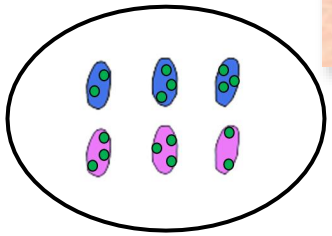
The Biology:

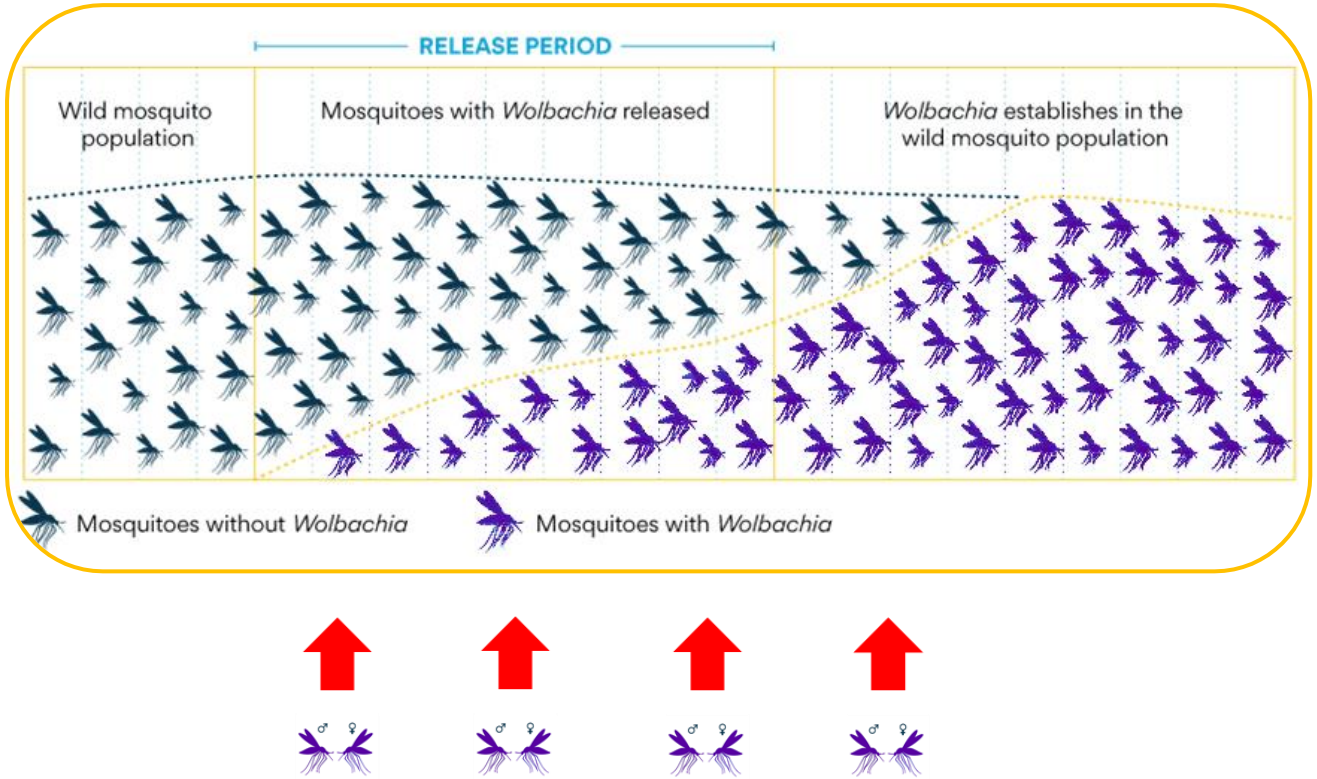
- **Natural** *Wolbachia* virus blocking system
- **Natural** spread of *Wolbachia* through the population

Technology #3 Population Replacement

"*Wolbachia* Population Replacement Method"

Yellow fever mosquito





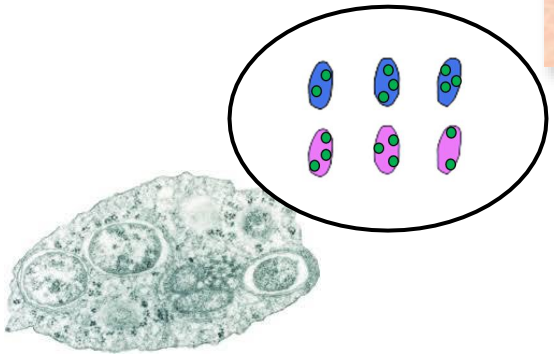
The Biology:

- **Natural** *Wolbachia* virus blocking system
- **Natural** spread of *Wolbachia* through the population
- **Male and female** mosquitoes released
- **Permanent modification** of mosquito population

Technology #3 Population Replacement

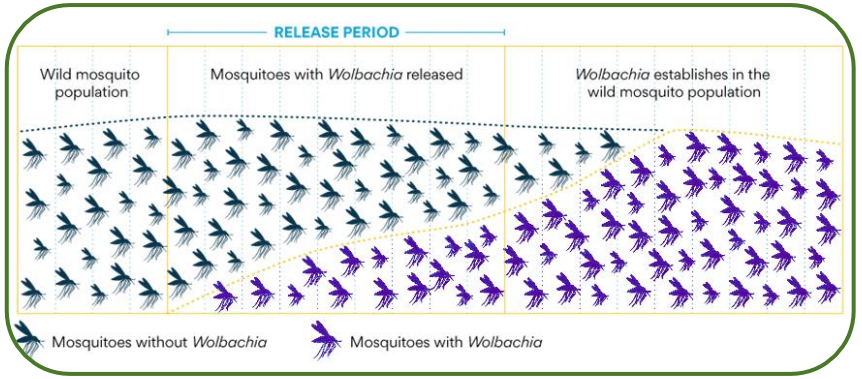
"*Wolbachia* Population Replacement Method"

Yellow fever mosquito



Benefits: *Wolbachia* Population Replacement Method

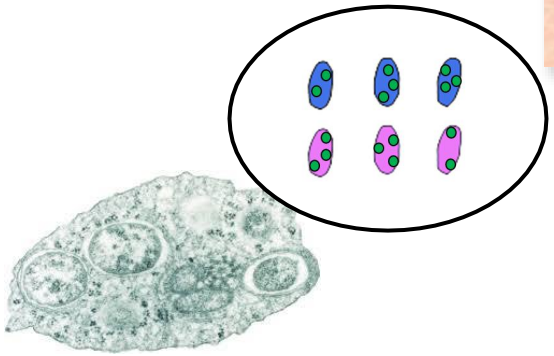
- **Adults or eggs** can be released
- **World Health Organisation** supports the technology for dengue
- **Proven effective across Nth QLD since 2011** and developed in Australia
- "Set and forget" method, **requiring little maintenance**



Technology #3 Population Replacement

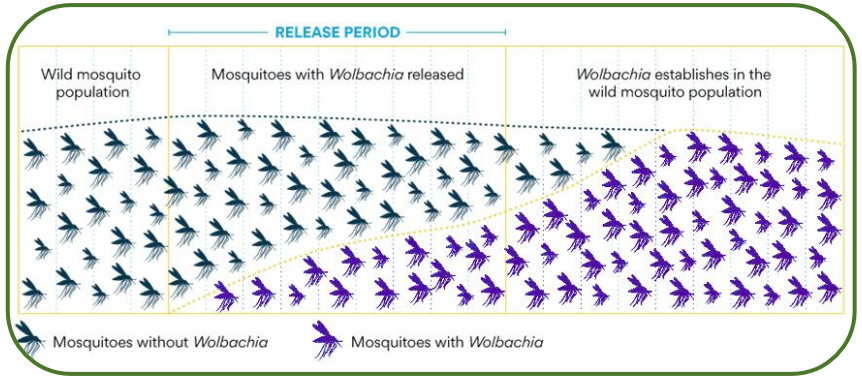
"*Wolbachia* Population Replacement Method"

Yellow fever mosquito

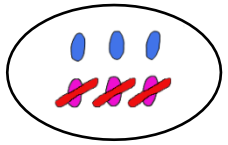
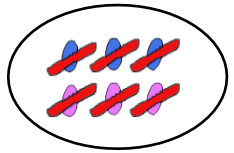
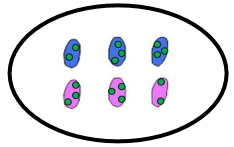


Considerations: *Wolbachia* Population Replacement Method

- **Does not remove** mosquitoes or stops biting
- Almost **impossible to remove** from the mosquito population once replaced
- Only works on **yellow fever mosquito**
- **Does not align well** with a sustainable business model
- Unproven **how long the virus blocking** effect will last



Commercial Solutions Available

Symbol	Name	Yellow fever mosquito 	Asian tiger mosquito 	Scalability	Commercial Potential
	Self Liming System	✓	✓	High	High
	*Wolbachia* Sterile Insect	✓	✗	Moderate	High
	*Wolbachia* Replacement	✓	✗	High	Low

Future Commercial Conversations

- CSIRO would like to explore commercial opportunities with Gur A Baradharaw Kod.
- The future discussion would focus on co-design to ensure the community's self-determination in the venture, building new economic development opportunities for Zenadth Kes, and creating local employment and capabilities.
- We are seeking letters of support to continue commercial discussions with you in the future.

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Mary Frey
Commercial Manager

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Cultural Capability Advisor

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CSIRO Invasive Mosquito Elimination Program

Concept Co-Development Workshop

Waibene, Zenadth Kes, James Cook University Campus

Wednesday 16th November 2022
(rescheduled from Tues 15th Nov)

CSIRO

INDIGENOUS TO INDIGENOUS

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INSIGHT FOR DEVELOPMENT

Agenda

1 Introduction and Purpose

Introduction and purpose of the Concept Co-Development Workshop

2 The Story So Far

Overview of the IPSE Strategy, Principles, the FPIC Standard, the Relationship, Governance and Participation Framework and the conversations so far

3 Science & Technology Options

The problem, how invasive mosquitoes are currently managed; and the technology options for new solutions

20 mins – Morning tea

4 Commercialisation & Potential Benefits

The possibilities and the process for commercialisation; and the potential benefits biosecurity, health, education and income generation opportunities.

5 Questions to Consider Together

Ways of Working together, approaches to ongoing FPIC processes, and Social License

6 How to Move to a Decision to Co-Design

Seeking stakeholder permission and advice on how to move to a decision to co-design

1

Introduction and Purpose

The purpose of this workshop is to continue our conversations about the possibilities of the proposed CSIRO Invasive Mosquito Elimination Program for Zenadth Kes.

In line with the Free Prior and Informed Consent (FPIC) standard, we will continue the process of building relationships, sharing knowledge, and co-developing potential governance and partnership models.

CSIRO
Australia's national science agency

Dr Brendan Trewin
Medical Entomologist

Mary Frey
Commercial

Andrew Boomer
Project Manager

CSIRO
Australia's national science agency

One of the world's largest multidisciplinary science and technology organisations

5,200+ dedicated people working across 58 sites globally

Purpose since 1926: To solve the greatest challenges through innovative science and technology

Now:
Designing our programs to benefit industry and the welfare of Australian communities

i2i-Square Circle

Capability Partner - Indigenous Engagement and Social Performance

i2i Global
Darren Godwell
President + CEO
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INDIGENOUS TO INDIGENOUS

Square Circle
Dr Tim Grice
CEO + Founder
E: tim@squarecircle.org

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2

The Story So Far

The key principles informing our approach to Indigenous Participation and Stakeholder Engagement

Relationships – Acknowledging and respecting the relationships and social structures of the Traditional Owners in all engagement

Respect - A respect for the Traditional Owners of Zenadth Kes, their knowledges and cultures, their pre-existing systems of governance and ways of knowing, and their capacity to deliver any project on their own terms.

Collaboration – A genuinely collaborative approach to partnering with TO's, public and private sector stake-holders in a way that is generous and exploratory.

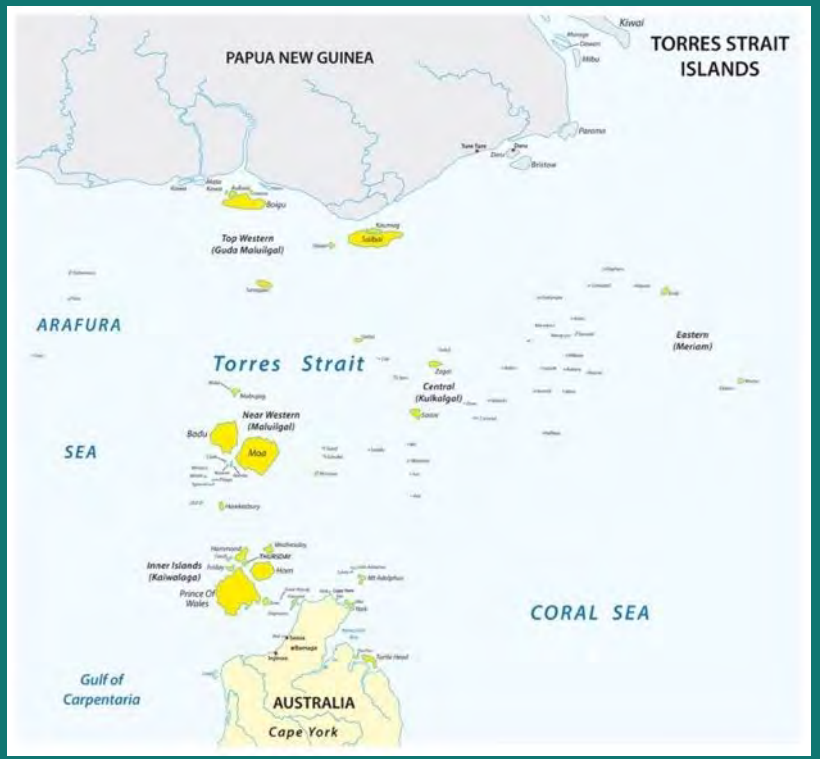
Participation – Meaningful Indigenous engagement, participation, consent and social license is central to the program design, implementation and ongoing monitoring ('nothing for us, without us').

Sustainability – Environmental, social and economic sustainability in all project activities.

Free, Prior and Informed Consent (FPIC)

Free, Prior and Informed Consent (FPIC) is an international human rights standard that recognises the critical decision-making role of Traditional Owners

- Free, Prior Informed Consent (FPIC) refers to a right of peoples to consent, on a free and informed basis, to development that takes place on their country or seas, may affect them or the lands on which they live.
- FPIC is the highest standard within the development sector and is common across Indigenous engagements globally.
- The Native Title Act 1993 is an Australian law that recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs.
- An FPIC approach to engagement with the Traditional Owners of Zenadth Kes is critical for the proposed Invasive Mosquito Elimination Program.



Free, Prior and Informed Consent (FPIC)

The approach to Indigenous participation is guided by i2i Global-Square Circle's framework to operationalise the standard of Free, Prior and Informed Consent (FPIC)

Not only will FPIC be considered for initial consent, it will be practiced and mainstreamed throughout the project life-cycle.

i2i-SC understand 'consent' as being contingent, conditional and iterative.

In practice this means:

- collaborative design with local communities and leaders, privileging Indigenous knowledge, ownership and voices, and
- commitment to demand-side capacity development, with Indigenous leaders and community members being involved in implementation and with developing capacities in line with their self-defined needs.

OPERATIONALISING FPIC – I2I–SC FPIC FRAMEWORK

EIGHT DISTINCT PHASES OF THE FPIC FRAMEWORK PROVIDE HOLISTIC IMPLEMENTATION OF FPIC PRINCIPLES.

PERMISSION FOR A CONVERSATION

SEEKING PERMISSION TO HAVE CONVERSATION.

SHARING UNDERSTANDING AND KNOWLEDGE

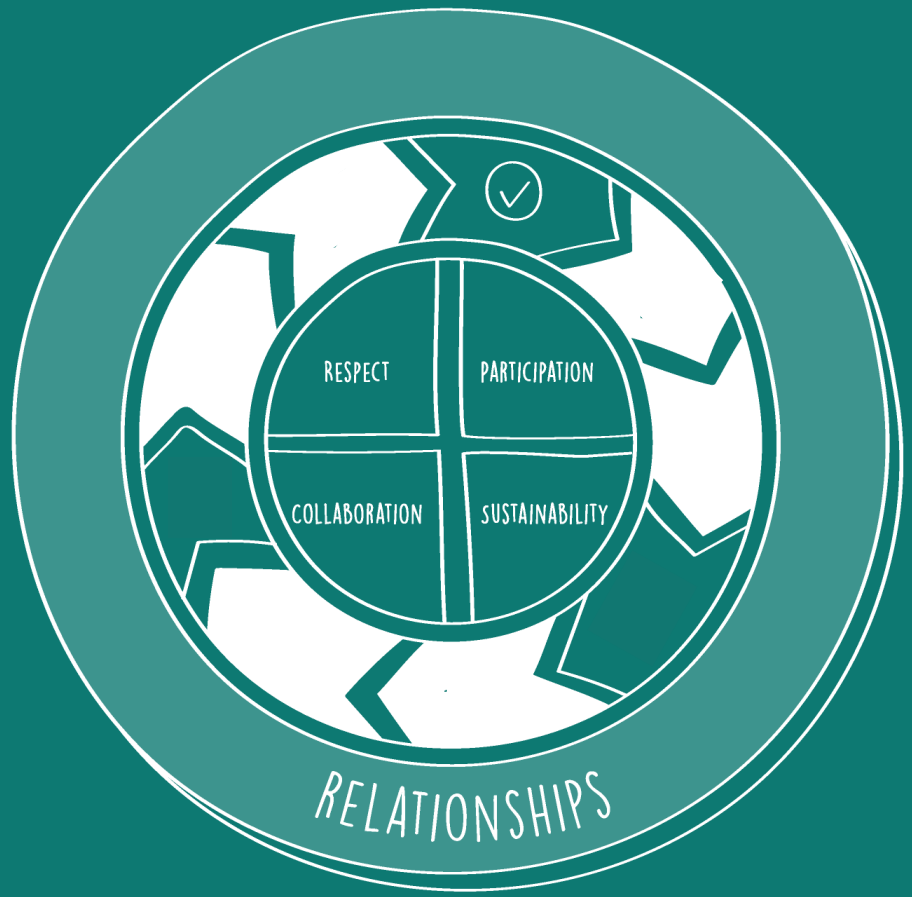
STAKEHOLDERS HAVING TIME, INFORMATION AND RESOURCE TO BUILD UNDERSTANDING.

EXPLORING GOVERNANCE AND PARTNERSHIP MODELS

COMMUNICATE THE NEED FOR A PARTNER. THERE MAY BE DIFFERENT TYPES OF PARTNERSHIP.

DECISION TO CO– DESIGN

THE TOS AND STAKEHOLDERS MAY DECIDE IF THERE WILL BE A PROJECT AND ON WHAT TERMS. AT ANY POINT TOS AND STAKEHOLDERS MAY SLOW DOWN, STOP OR RESET THE PROJECT.



COLLABORATIVE INVESTMENT DESIGN

CO–DESIGN OF PROJECT INCLUDING COMMERCIAL PARTICIPATION & SOCIAL/ECONOMIC IMPACT.

INDIGENOUS PARTICIPATION PLAN

AGREE AN PARTICIPATION PLAN PLAN.

PROJECT APPROVAL & PARTNERSHIP CONDITIONS

APPROVAL BY TOS AND STAKEHOLDERS, RELATING TO THE PERIOD OF TIME, RENEWAL AND EXPECTATIONS OF THE PROJECT.

CAPACITY DEVELOPMENT

EARLY CAPACITY DEVELOPMENT INITIATIVES AND SUPPORT TO GET READY TO MOBILISE.

MONITORING, EVALUATION AND LEARNING

ONGOING MONITORING, EVALUATION AND LEARNING TO SUPPORT ADAPTIVE PROJECT DELIVERY AND INCLUSIVE IMPACTS.

i2i-Square Circle FPIC Framework©

The Conversation so far...

Workshops

Cairns Workshop (20 July 2022)

- The broader CSIRO, JCU and i2i-Square Circle teams discussed potential ways of collaborating
- Initial information was shared about the nature of the vector-borne disease threat posed by invasive mosquitos, the CSIRO Invasive Mosquito Elimination Program, potential approaches to Indigenous participation if a program was to proceed in the Torres Strait, and the partnership opportunities between JCU and CSIRO

Torres Strait Island Engagement

Torres Strait Regional Authority (TSRA) and Torres Shire Council

- The CSIRO and i2i-Square Circle team were introduced to the CEO and LSMU of TSRA and the Torres Shire Council Mayor. Permission and support was sought for discussions to continue (July 2022)

Local JCU Research Interests

- Engagement with JCU PhD candidate to share initial information on research opportunities (July 2022)

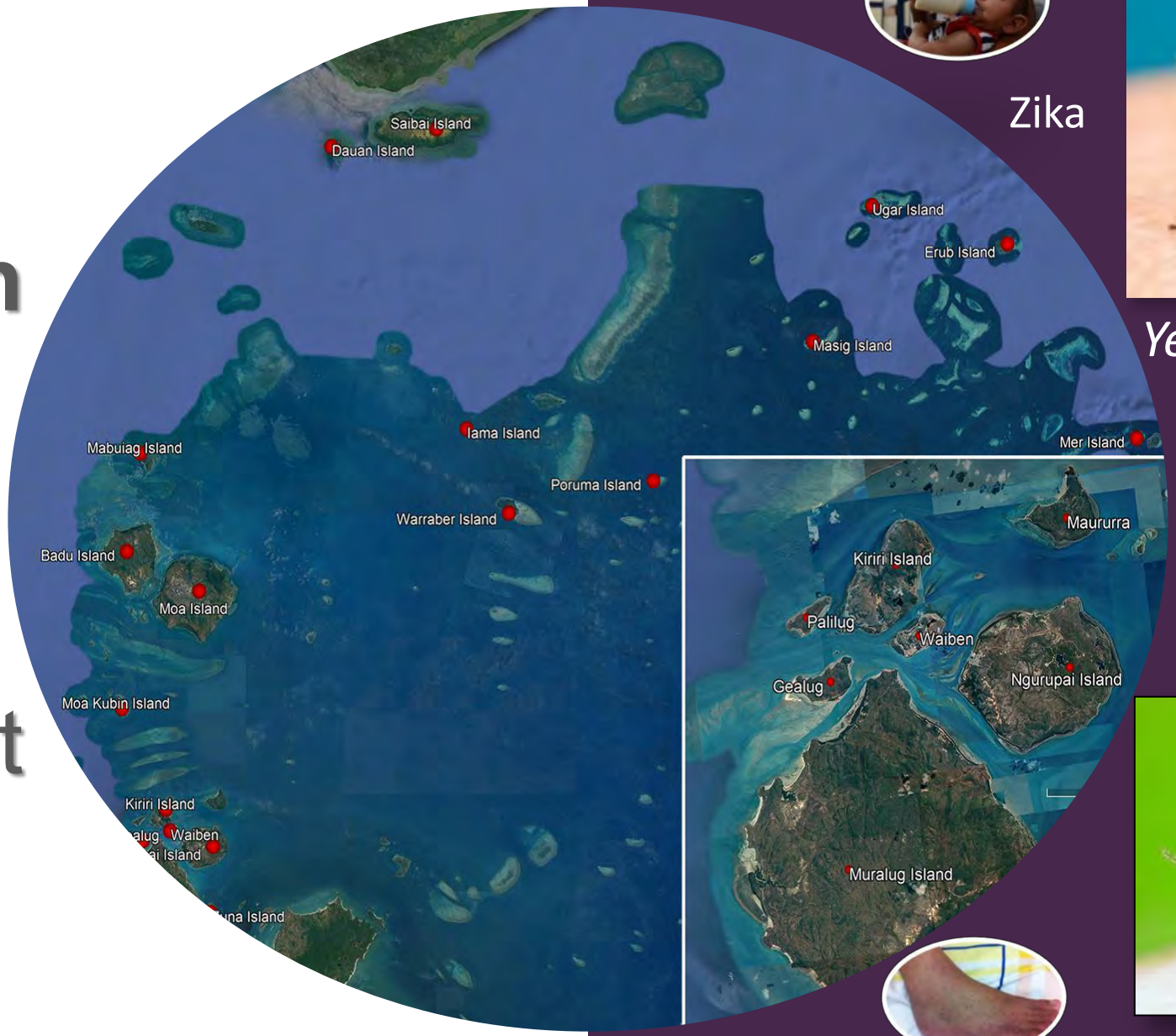
Gur A Baradharaw Kod Torres Strait Sea and Land Council (GBK)

- Initial discussion to share information and seek permission for discussions to continue (August - September 2022)

3

Science and Technology Options

Elimination of Deadly, **Invasive** Mosquitoes in the Torres Strait



Zika

Yellow fever mosquito

Dengue fever

Chikungunya

Asian tiger mosquito

CSIRO / i2i / Square Circle
Health and Biosecurity
Australia's National Science Agency

The Problem

Rapid rise in epidemic viral diseases spread by invasive mosquitoes

Yellow fever

Chikungunya

The Era of Epidemic Dengue

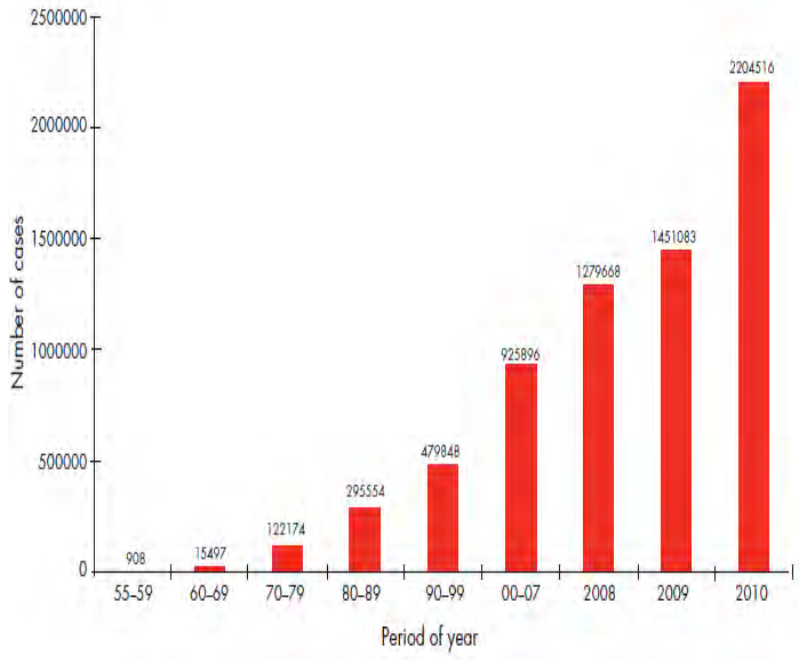
Dengue fever

Zika

The Problem

Rapid rise in epidemic viral diseases spread by invasive mosquitoes

Dengue cases
Source: WHO



5.2 million cases

2019

The Era of Epidemic Dengue

- 300x increase in dengue since 1960s

Due to:

- Spread of invasive disease vectors
- Rapid urbanization (habitat/food)
- Trade and human movement (spread)
- Climate change (conditions)

Traditional tools are failing

- Insecticide resistance
- Impacts on the environment

Dengue in the Torres Strait

- Earliest known epidemics of dengue occurred in 1912
- Dengue returned to Torres Strait in 1996 (201 cases)
- 2002 – 2003 outbreak (276 cases)
- Dengue outbreaks 2016-2017 – Erub, Badu and Masig
- Resulting from tourism and human movement cross-border with PNG

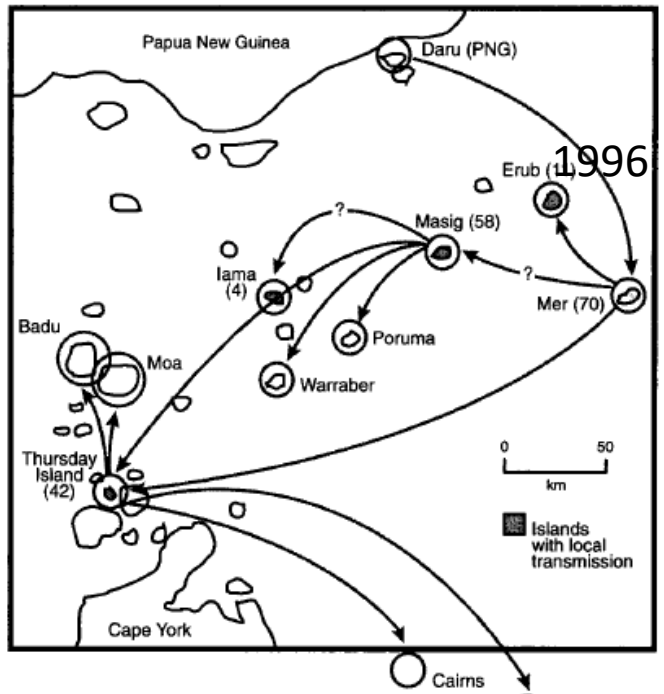
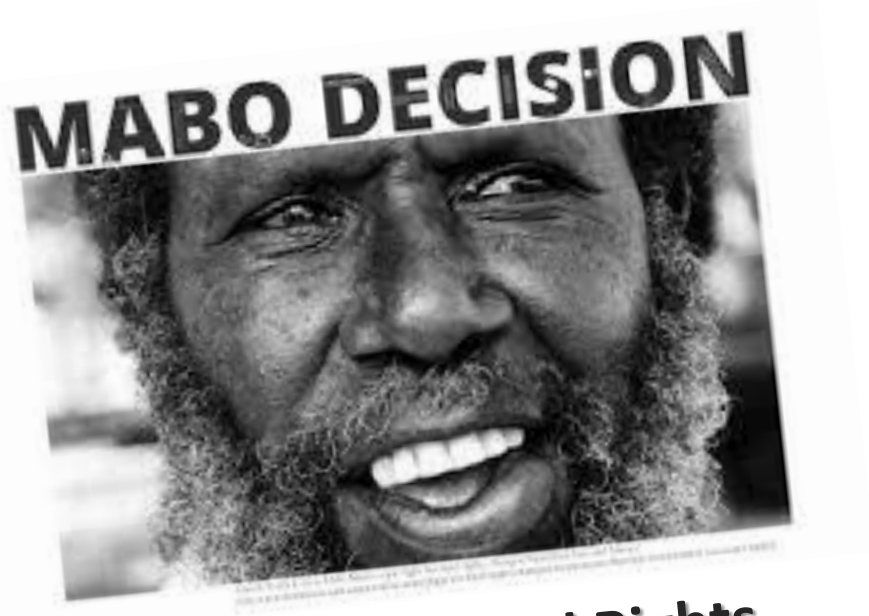


Figure 2: Torres Strait islands, showing the apparent movement of dengue-infected people within the region and the "dengue-receptive" region of mainland Australia. The total number of confirmed cases on the islands with local transmission is given in parentheses.

Torres Strait Islanders are National and International Leaders



Indigenous Land Rights

Climate Change Resilience & Adptation

Leaders: Elimination of Invasive Mosquitoes

The Invasive Mosquitoes

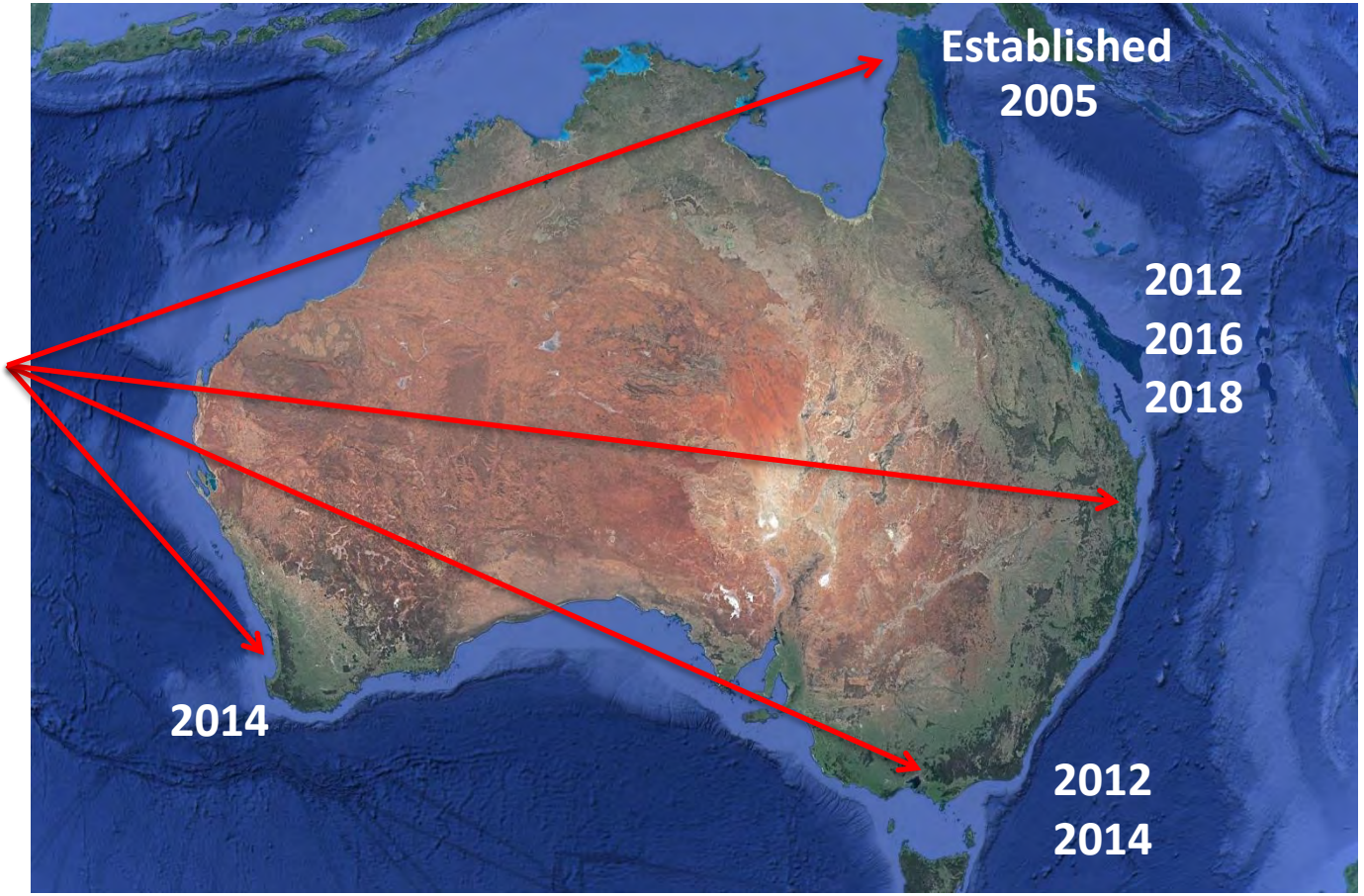
Asian tiger mosquito
(Aedes albopictus)

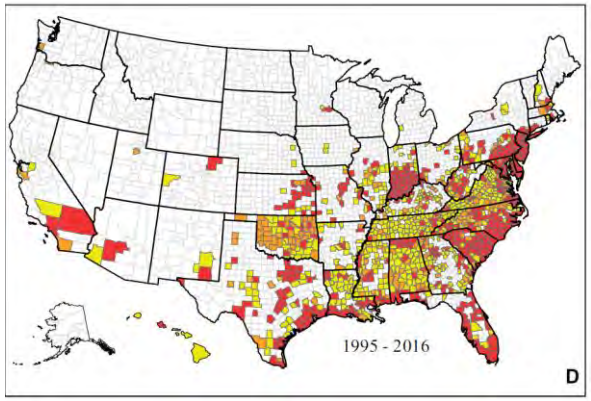
Yellow fever mosquito
(Aedes aegypti)

The Asian Tiger Mosquito

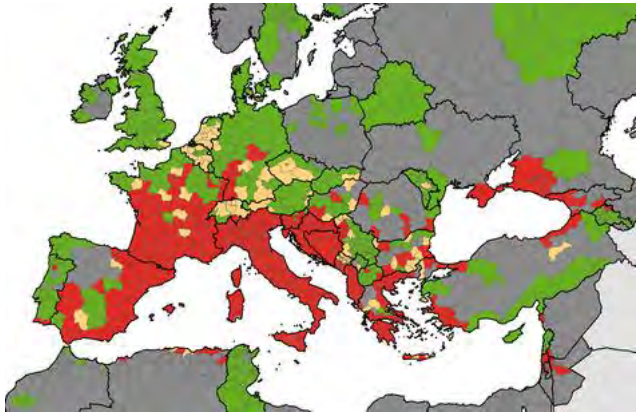
The most invasive mosquito species across the world

Detections at Sea Ports





Texas 1985

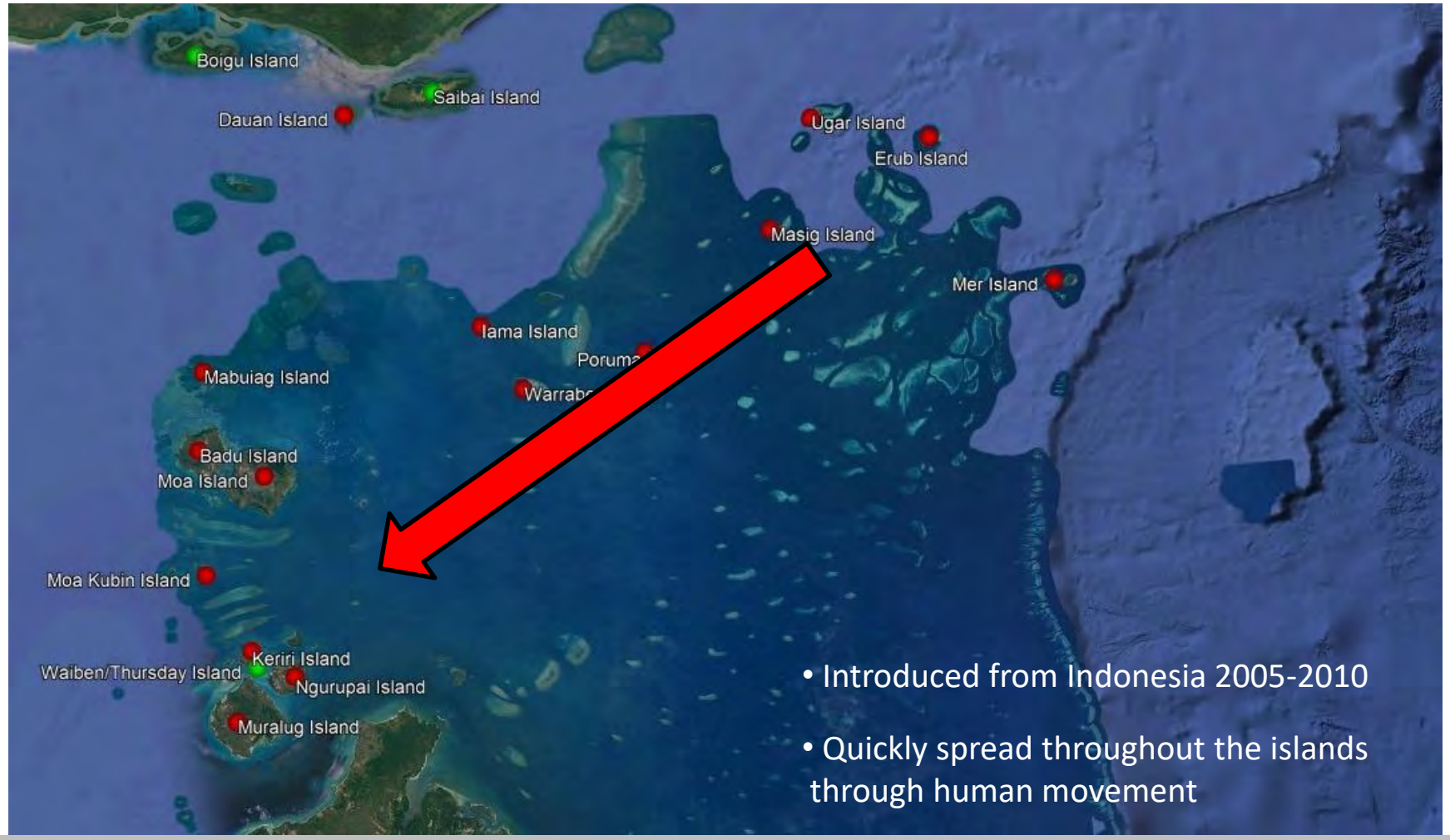


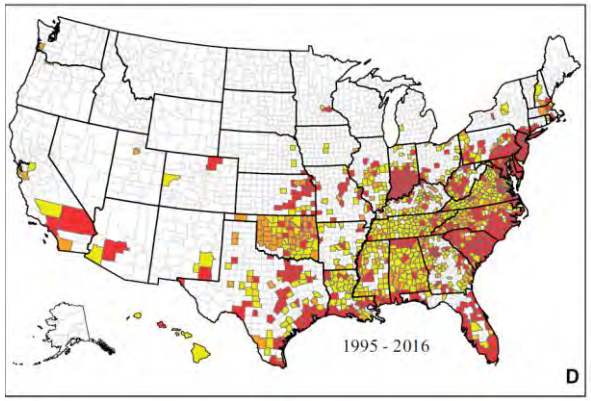
Italy 1990

Benedict (2009)

The Asian Tiger Mosquito

The most invasive mosquito species across the world





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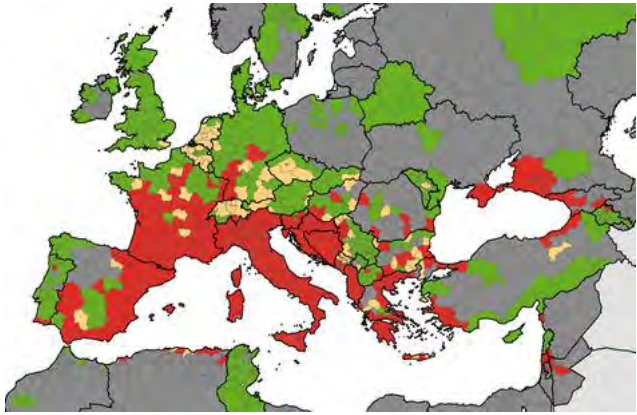


Italy 1990

Benedict (2009)

The Asian Tiger Mosquito

The most invasive mosquito species across the world

- **Basic Biology:**
  - Females bite! Protein for egg production, spread disease
  - Eggs survive >1 year

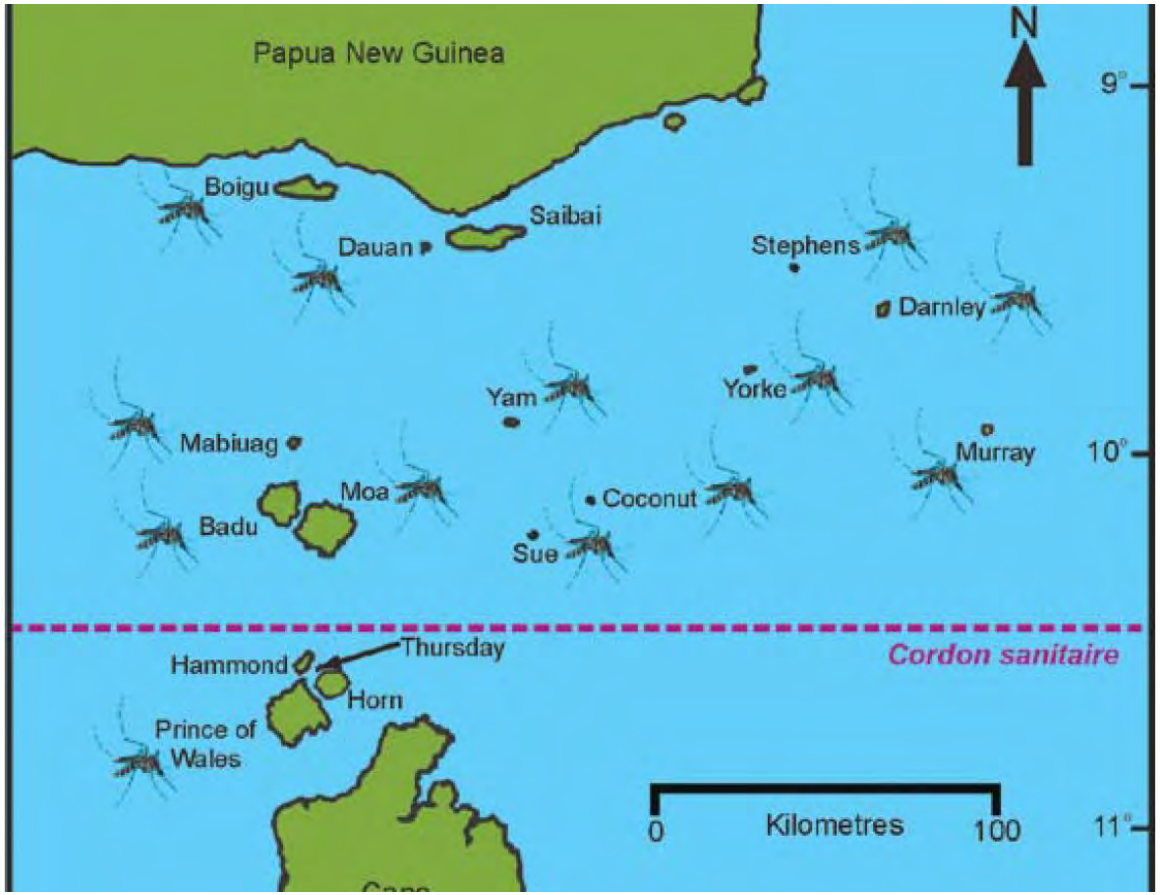
Dengue fever

  - Urban and forest areas
  - Bites during the day

Chikungunya

- Primary mosquito capable of spreading Chikungunya
- Spreads dengue in the Torres Strait

How are invasive mosquitoes currently managed?



Timeline:

2005 - Eradication campaign (AAEP) begins
- QLD Health advisory group formed
- Control focused on larval habitat
- $10 million Dept of Health over 10 years

2008 – Cordon sanitaire begins, focus on keeping the Asian tiger mosquito from southern islands

How are invasive mosquitoes currently managed?

Fig 2. Harborage spraying using a vehicle-mounted unit to control *Ae. albopictus* on Thursday Island.

2010 – Asian tiger mosquito discovered on Waiben and Ngurupai

- **Cordon sanitaire changes from exclusion to population suppression**

2011 – Larval control is supplemented by barrier sprays of vegetation around urban environments

2016 – Successful removal of the Asian tiger mosquito from Waiben

2022-2024 - $3.46 million Dept of Health to continue population suppression activities

How Successful has the Campaign Been?

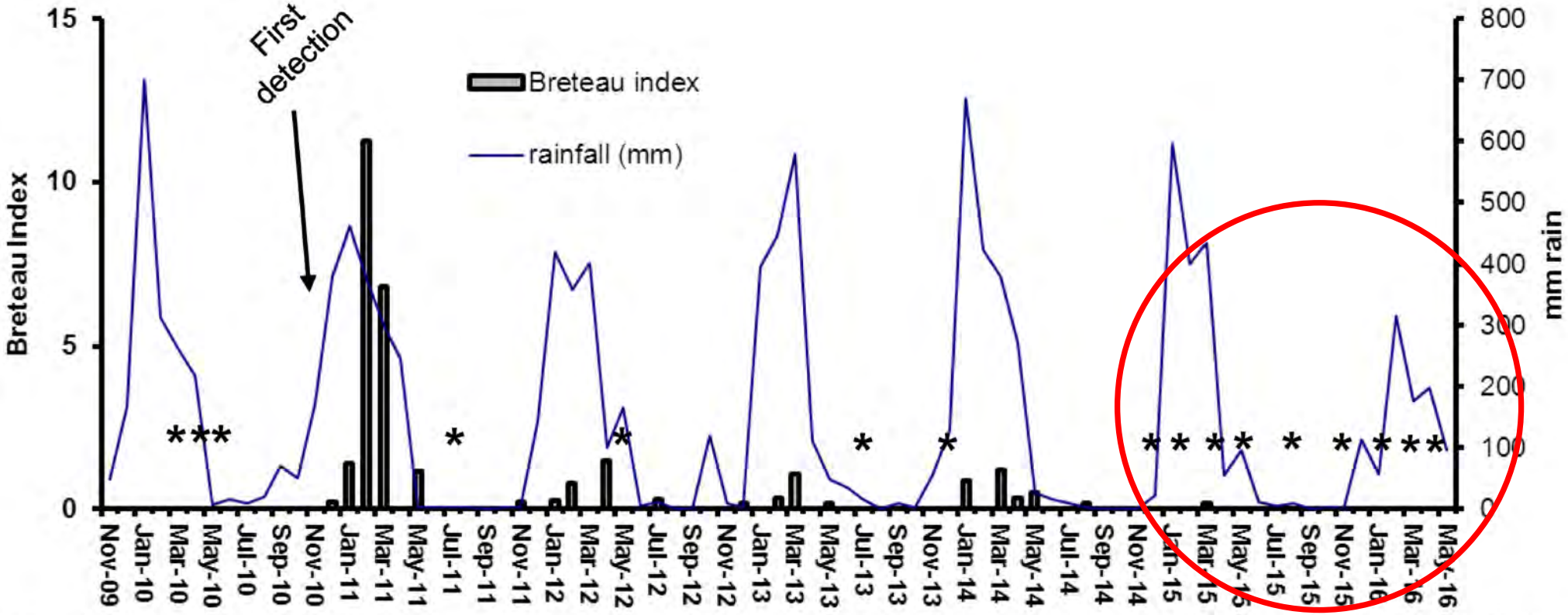


Fig 3. Prevalence of containers with *Aedes albopictus* larvae on Thursday Island, showing progressive decline over the period 2011–2016.
Breteau Index represents number of positive containers per 100 houses inspected. Stars indicate surveys with nil detection.

INDIGENOUS TO INDIGENOUS
Square Circle INSIGHT FOR DEVELOPMENT
CSIRO

How Successful has the Campaign Been?

Benefits:

- **Well run campaign: ATM elimination from Waiben Island**
- **Has prevented the Asian tiger mosquito (ATM) establishment on the mainland**

Considerations:

- **Habitat removal and chemical spraying is not a scalable solution across all islands – elimination not possible**
- **Torres Strait Islanders are still vulnerable to mosquito-borne disease**
- **Large populations remain elsewhere**

Yellow fever mosquito

Dengue fever

Yellow fever

Chikungunya

Zika

The Yellow Fever Mosquito

Basic Biology:

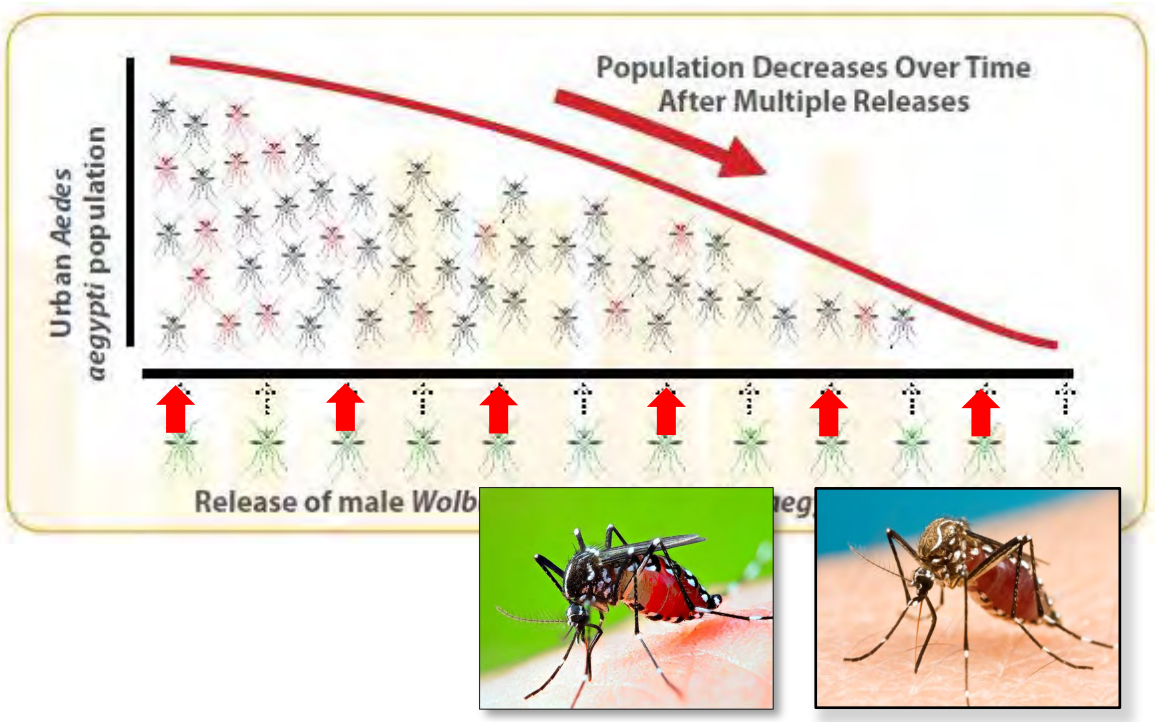
- Introduced during European settlement
- Feeds almost entirely on humans (repeatedly)
- Urban areas only
- Backyards in Waiben and Boigu!

- Replaced by the Asian tiger mosquito
- Still responsible for dengue
- Potential to spread throughout the Torres Strait

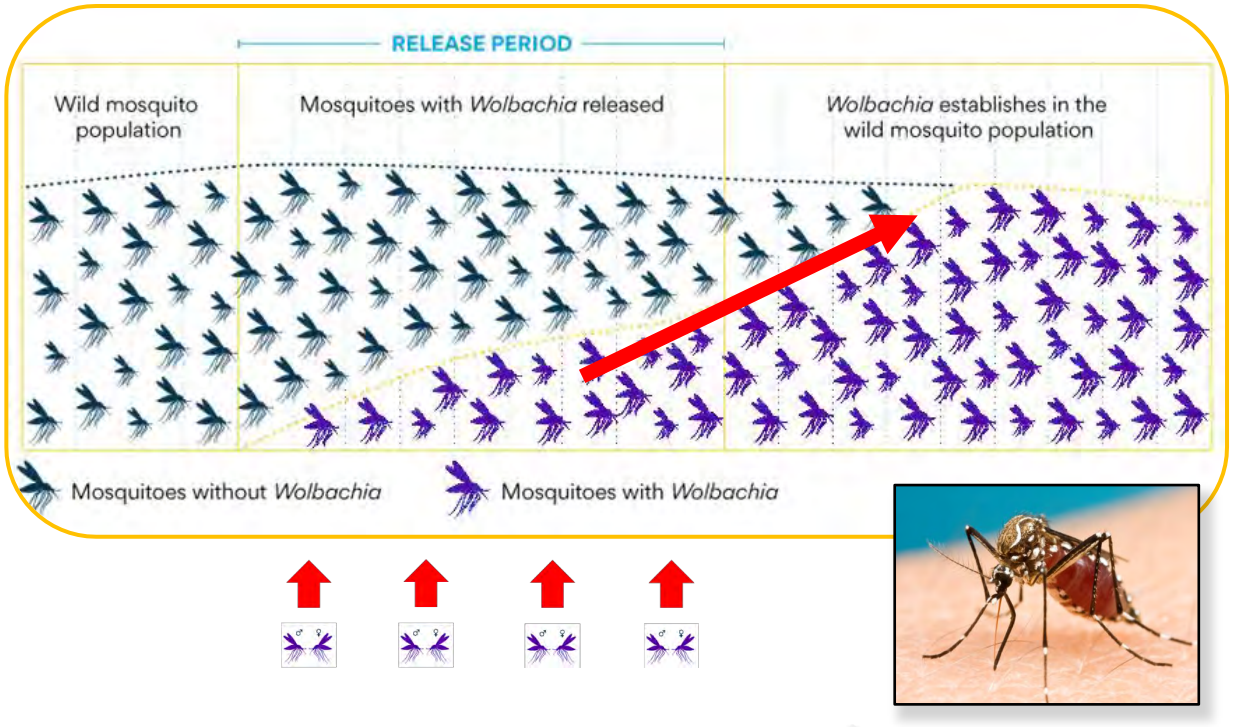
Morning Tea

Potential Solutions: Elimination of Invasive Mosquitoes and the Diseases they Spread

Population Elimination



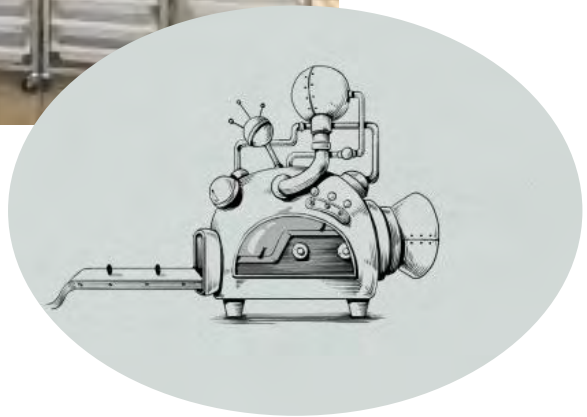
Population Replacement



Good Bugs: An Environmentally Friendly Solution

- Our mosquitoes are safe, non-toxic, 100% environmentally friendly
- Targeted to the species – no impact
- More scalable and effective than pesticides
- Not capable of spreading disease
- Efficacy of each solution varies depending on the goals of application

Good Bugs: An Environmentally Friendly Solution



Mass-rearing Facility

Release Method

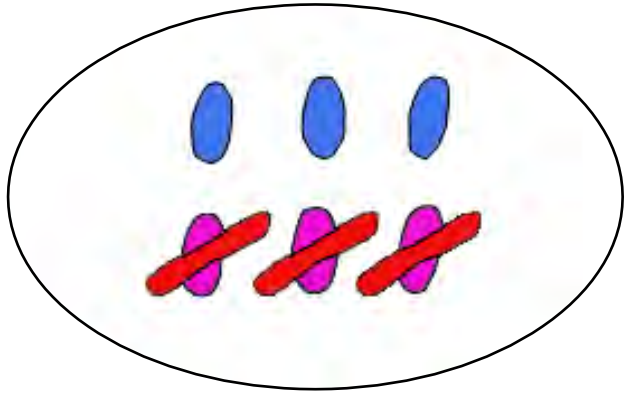
Population Elimination:

Technology #1 “Self Limiting Mosquito System”

Asian tiger mosquito

Benefits of Self Limiting System:

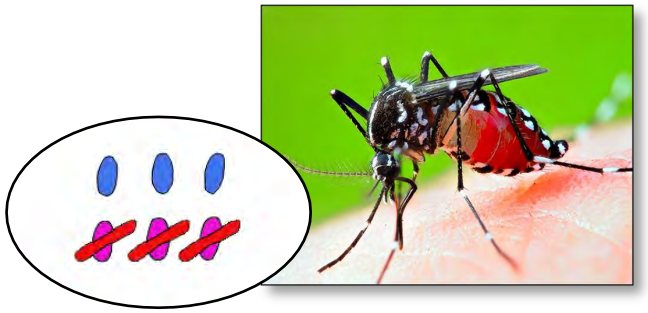
- Only **non-biting, sterile males** are released by egg
- Does involve **genetic engineering**



Technology #1
“Self Limiting Mosquito System”

Population Elimination:

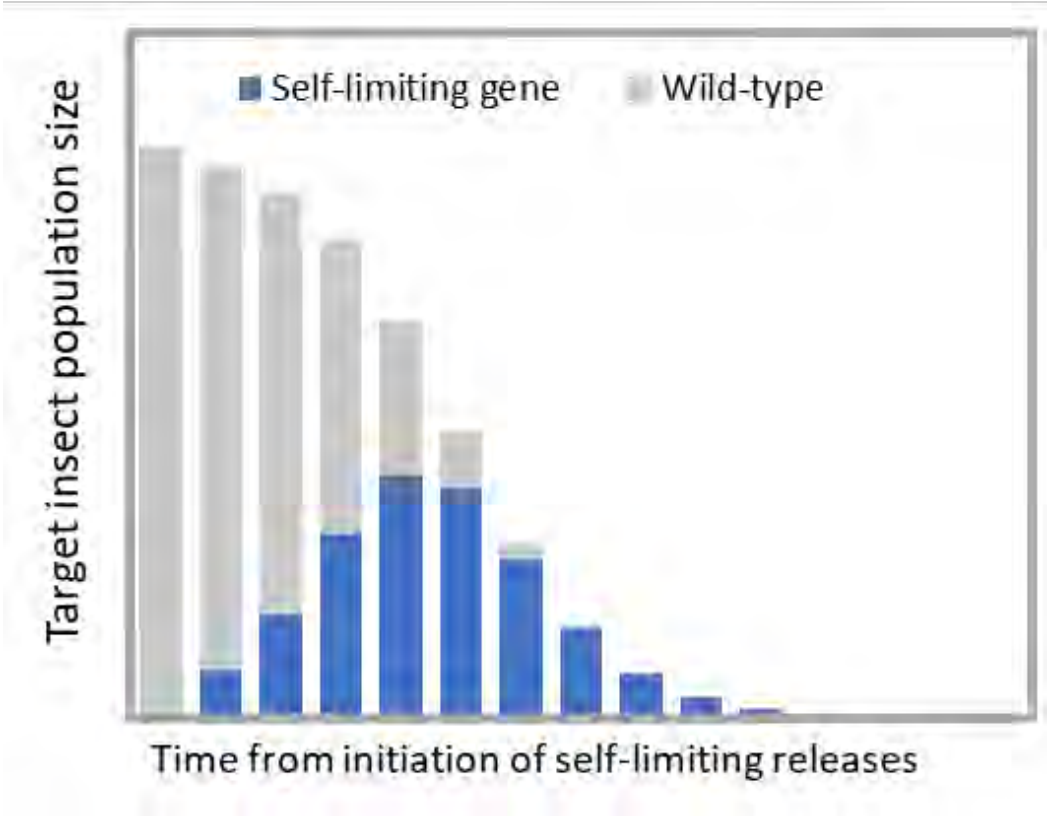
Technology #1 “Self Limiting Mosquito System”



Asian tiger mosquito

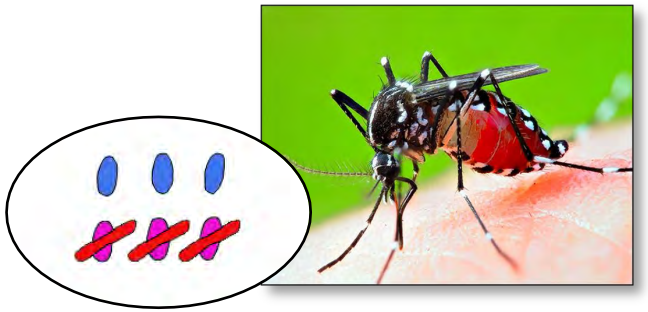
Benefits of Self Limiting System:

- Only **non-biting, sterile males** are released by egg
- Does involve **genetic engineering**
- Reversible, multi-generational, does not persist after releases stop
- Scalable, can treat the **entire Torres Strait** area to achieve elimination



Population Elimination:

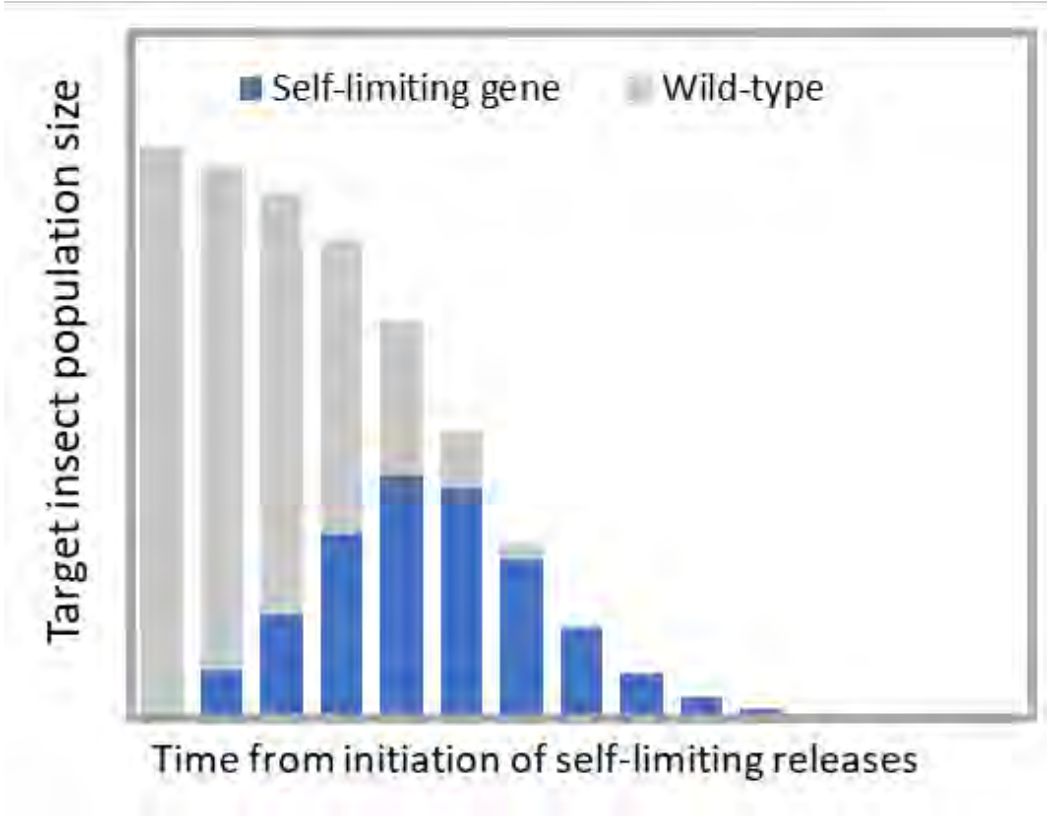
Technology #1“Self Limiting Mosquito System”



Asian tiger mosquito

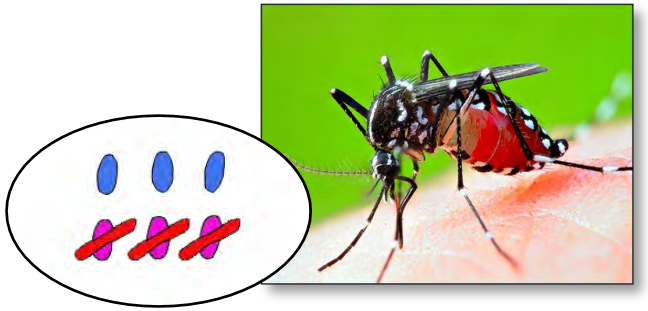
Benefits of Self Limiting System:

- Technology has **been around for 20 years**
- **Example: system EPA approved** in United States of America; Brazil, Africa, Malaysia, Panama
- Likely to **achieve elimination** throughout an island system like the Torres Strait



Population Elimination:

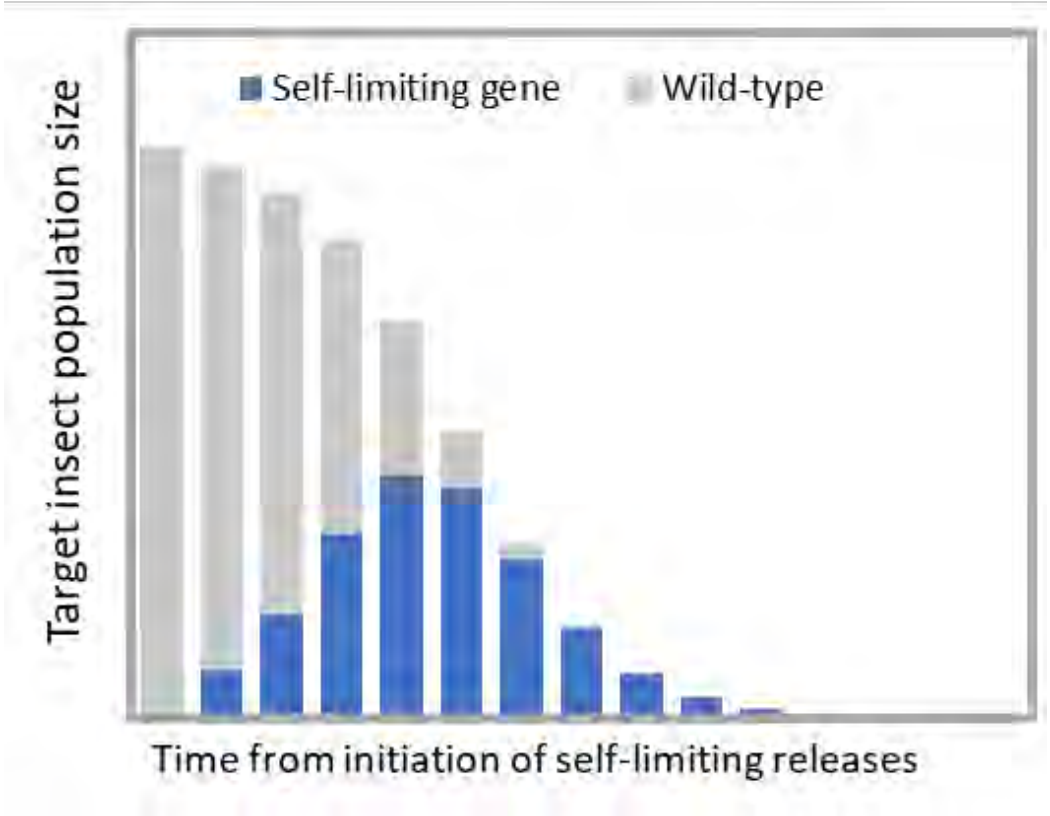
Technology #1“Self Limiting Mosquito System”



Asian tiger mosquito

Considerations of Self Limiting System:

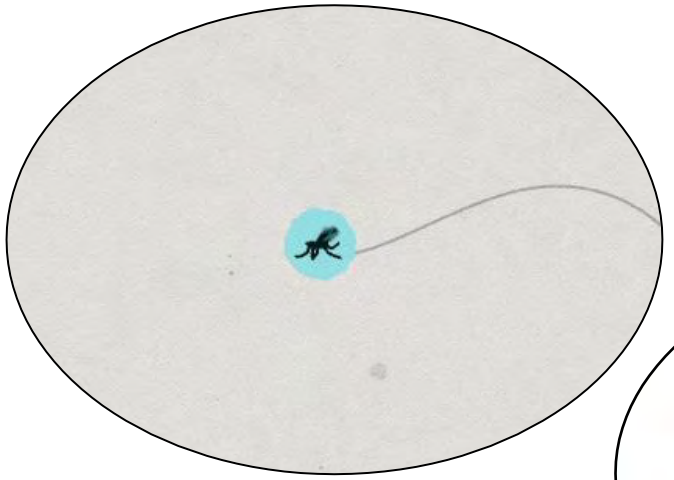
- High **regulatory standards** for approval
- **Maintaining mosquito facilities** requires high standards
- Potential for increased **activist attention** due to novel genetic engineering system



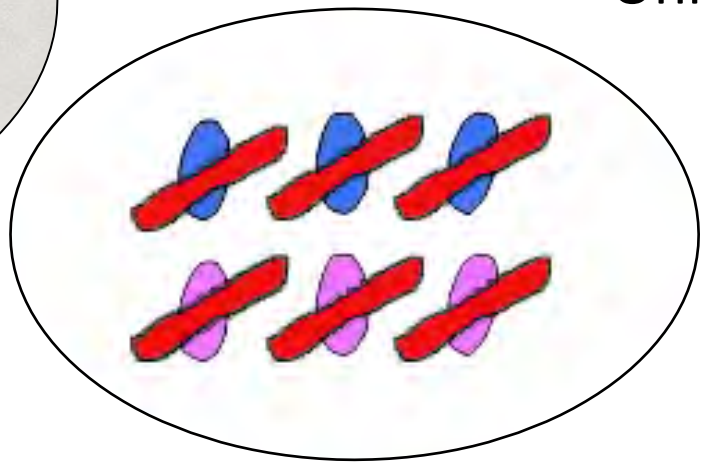
Population Elimination:

Technology #2 "CSIRO *Wolbachia* Sterile Insect System"

Yellow fever mosquito



- **2018: CSIRO first to prove effectiveness** of the technology

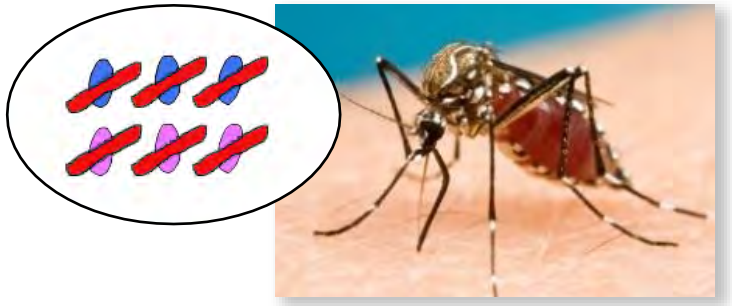


Technology #2
"CSIRO *Wolbachia* Sterile Insect System"

The Biology:

- Only **non-biting, sterile males** are released
- **No eggs hatch** from matings from released males and wild females
  - **Suitable for small populations** of invasive mosquitoes in TI

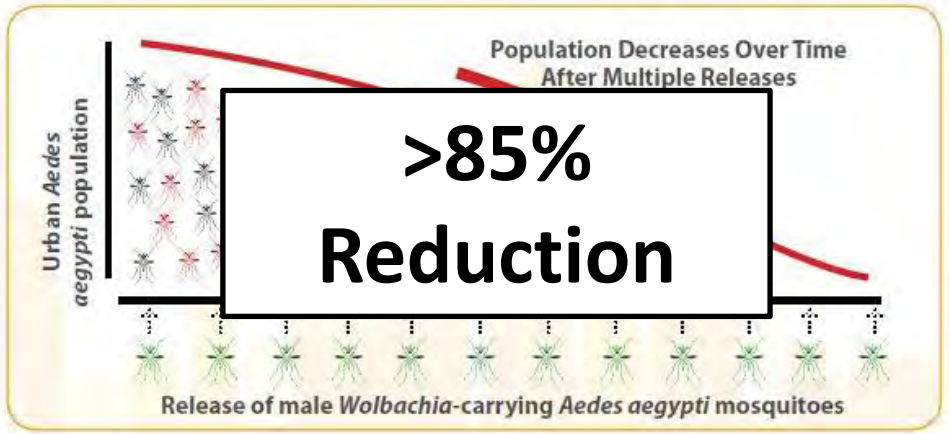
Technology #2 CSIRO Sterile Insect System



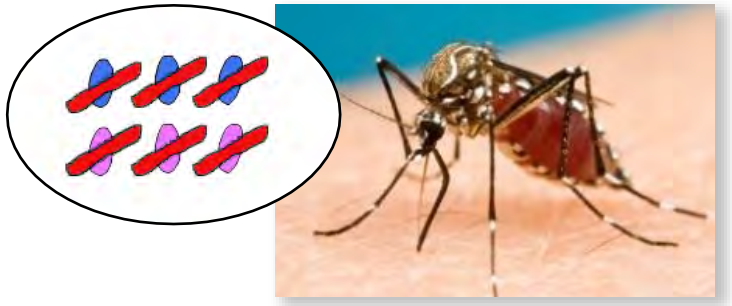
Yellow fever mosquito

Benefits: *Wolbachia* Sterile Insect Method:

- Applies a **sterility found in nature**
- Technology **mature, proven and effective**
- CSIRO are **world experts** in this method
- **Technology transferred** to Indigenous business



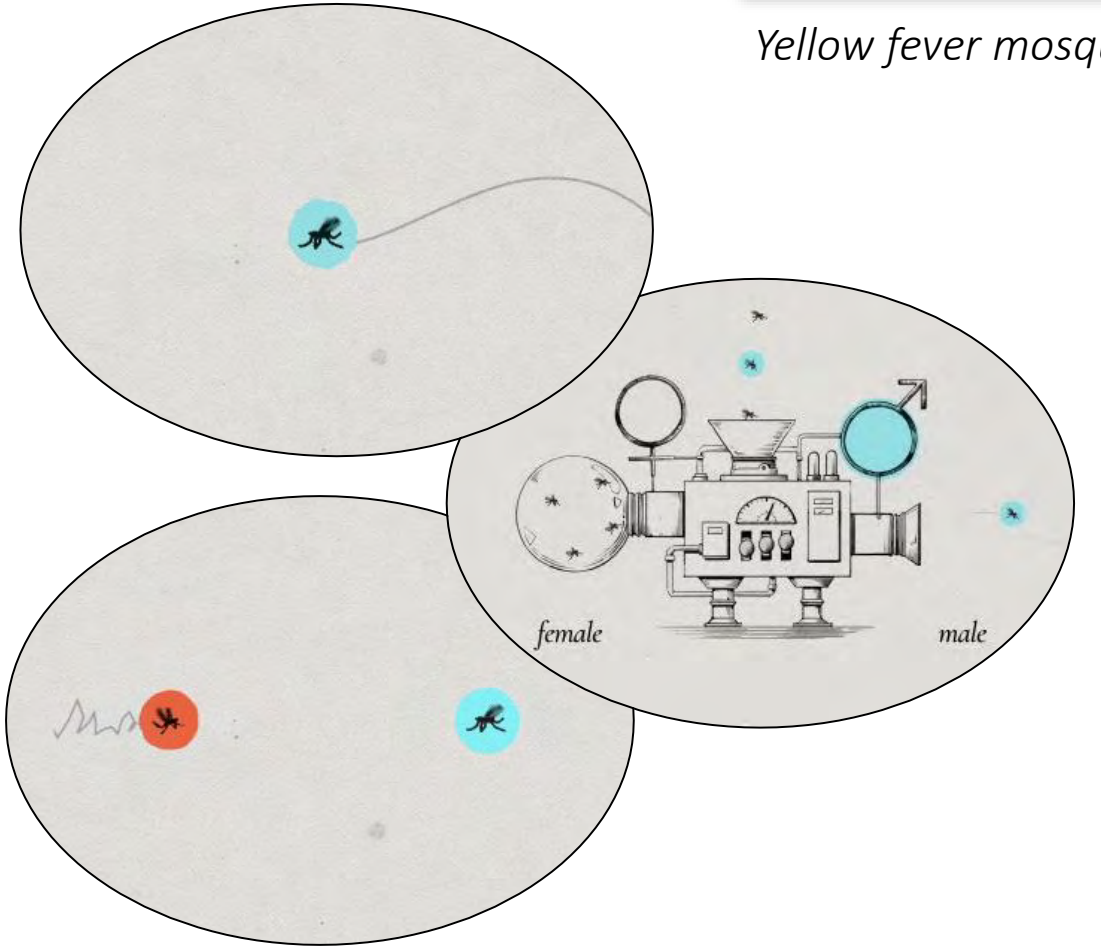
Technology #2 CSIRO Sterile Insect System



Yellow fever mosquito

Considerations: *Wolbachia* Sterile Insect Method:

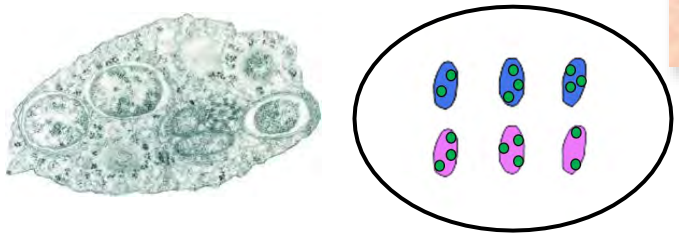
- **Releasing females** mosquitoes with *Wolbachia* can cause the method to fail
- Requires the **release of adults**
- Reliant upon **complex hardware and software**
- Proven only on **small areas**

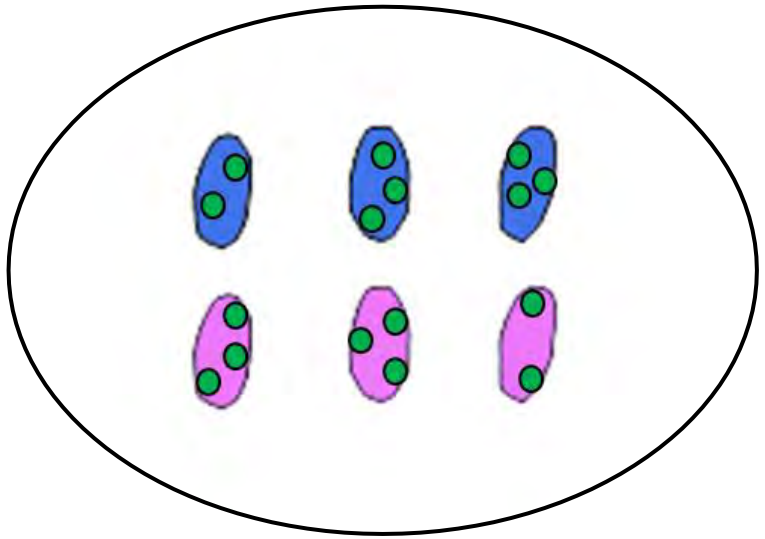


Technology #3 Population Replacement

"*Wolbachia* Population Replacement Method"

Yellow fever mosquito





Technology #3
"*Wolbachia* Population Replacement Method"

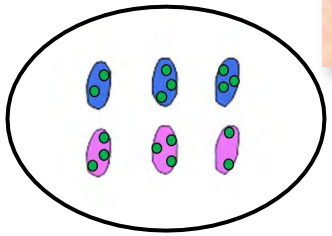
The Biology:

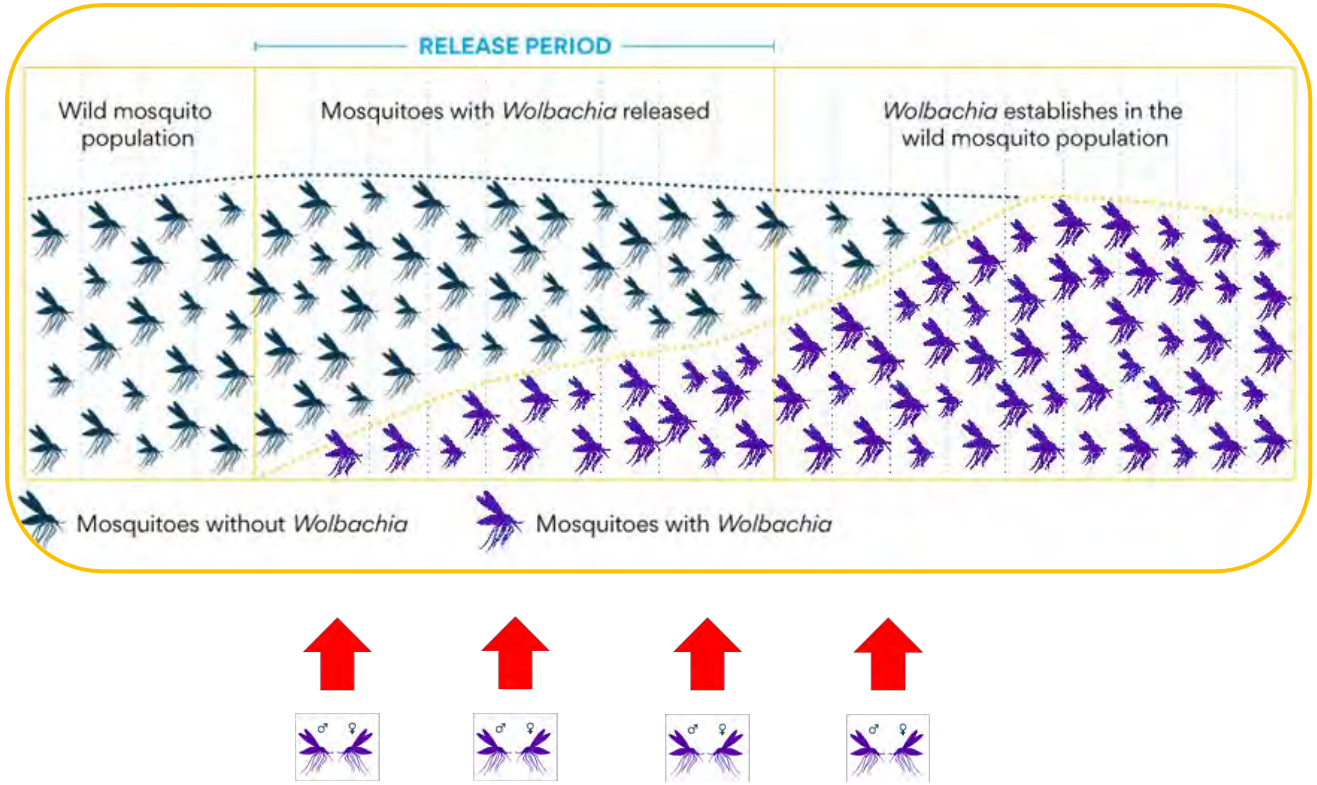
- **Natural** *Wolbachia* virus blocking system
- **Natural** spread of *Wolbachia* through the population

Technology #3 Population Replacement

"*Wolbachia* Population Replacement Method"

Yellow fever mosquito





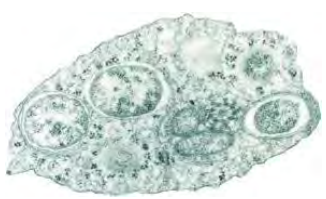
The Biology:

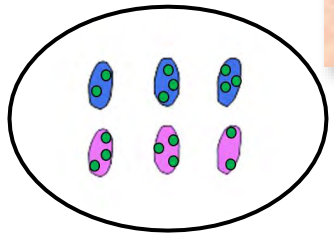
- **Natural** *Wolbachia* virus blocking system
- **Natural** spread of *Wolbachia* through the population
- **Male and female** mosquitoes released
- **Permanent modification** of mosquito population

Technology #3 Population Replacement

"*Wolbachia* Population Replacement Method"

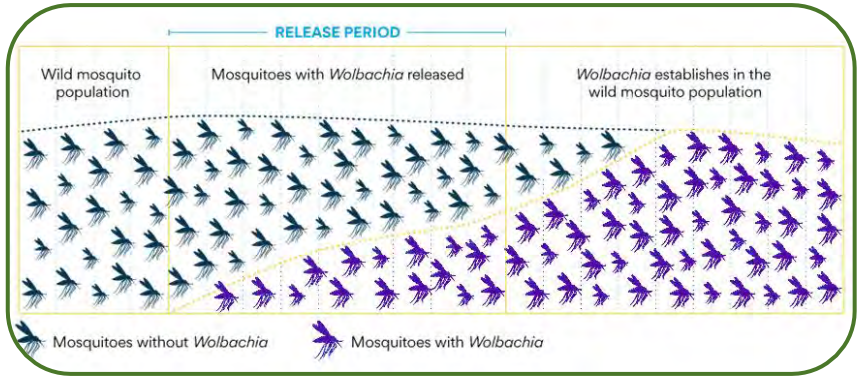
Yellow fever mosquito





Benefits: *Wolbachia* Population Replacement Method

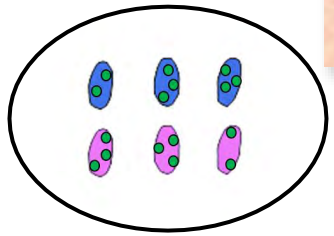
- **Adults or eggs** can be released
- **World Health Organisation** supports the technology for dengue
- **Proven effective across Nth QLD since 2011** and developed in Australia
- "Set and forget" method, **requiring little maintenance**



Technology #3 Population Replacement

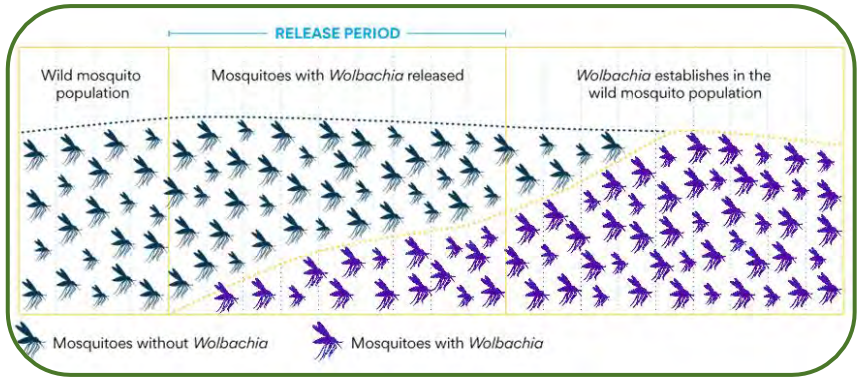
"*Wolbachia* Population Replacement Method"

Yellow fever mosquito

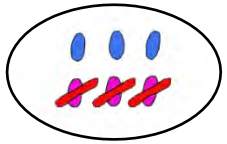
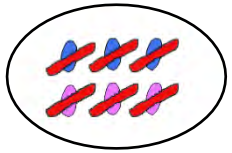
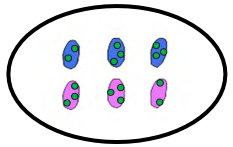


Considerations: *Wolbachia* Population Replacement Method

- **Does not remove** mosquitoes or stops biting
- Almost **impossible to remove** from the mosquito population once replaced
- Only works on **yellow fever mosquito**
- **Does not align well** with a sustainable business model
- Unproven **how long the virus blocking** effect will last



Technology Solutions

Symbol	Name	Yellow fever mosquito 
	Self Liming System	✓
	*Wolbachia* Sterile Insect	✓
	*Wolbachia* Replacement	✓

4

Commercialisation and Potential Benefits

Commercialisation and Business Model

The delivery model must be commercially viable to be sustainable. For us, this means a Torres Strait Island owned business with contracts for service delivery

Key considerations

- Exclusive licensing for use
- Lead customer or client
- Business structure
- Special Purpose Vehicle for mobilisation with transition to Indigenous owned business model
- Pipeline to commercialisation

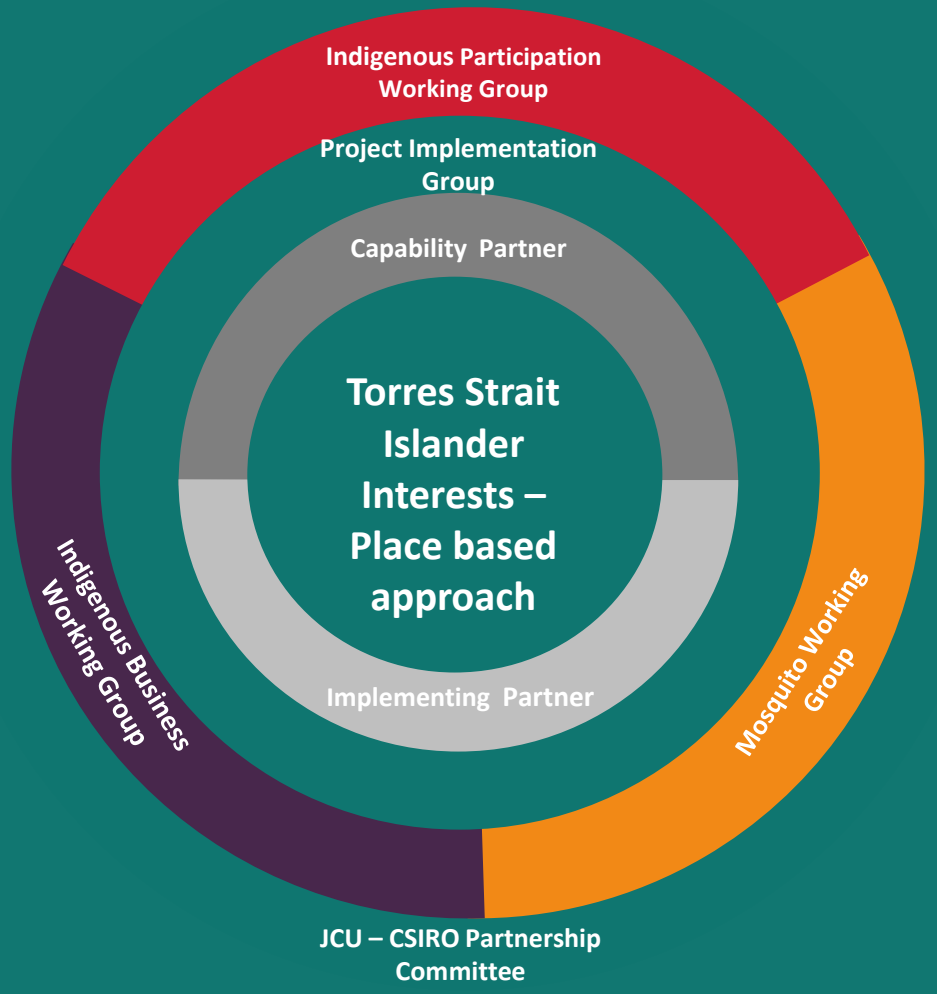
Sustainability – Viable from the Beginning

- Sustainability through deliberate design – operations, business & impact
- Commercial viability
- Creating a Torres Strait Islander owned company
- Jobs and career opportunities
- Indigenous science, stakeholder engagement & Indigenous knowledges, community education opportunities
- Opportunity to export skills and technology to Indo-Pacific

Zenadth Kes at the centre of the design is a place-based approach led by local communities and stakeholders

A place-based approach to finding mutual purpose that is specific to the unique needs of each place, culture and social context:

- Socio-cultural considerations
- Indigenous Knowledges
- Climatic and Environmental factors
- Local leadership, control and decision-making of the company and its on-going operations.



Potential benefits are broad-based

- Elimination of invasive mosquito populations.
- National leadership in biosecurity in protecting the Torres Strait and Australia
- Significantly reduced vector-borne disease burden – Dengue, Chikungunya and Zika
- Reduced public health costs and economic impacts
- Indigenous owned company opportunity
- Jobs and career opportunities
- Indigenous science education opportunities
- Opportunity to export skills and technology to Indo-Pacific

5

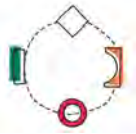
Questions to Consider Together

Questions to consider together…

Guiding questions for our discussions

What would a solution to invasive mosquitos in the TSI look like?

What do the solutions to the threats posed by invasive mosquitos look like in the Torres Strait? What does the CSIRO invasive mosquito elimination program offer?



How could we work together?

What are the next steps in the FPIC process that you need and that CSIRO need?
Are there ways of working we should consider?

To help your decision-making what types of information do you need?

What do you need from us to help you to further understand the opportunity or to talk to your stakeholders?

How do we best communicate with your stakeholders?

Is it through you? If so, what do you need from us? Or would you like us to come and talk to your stakeholders with you?

6

How do we move to a decision to Co-Design?

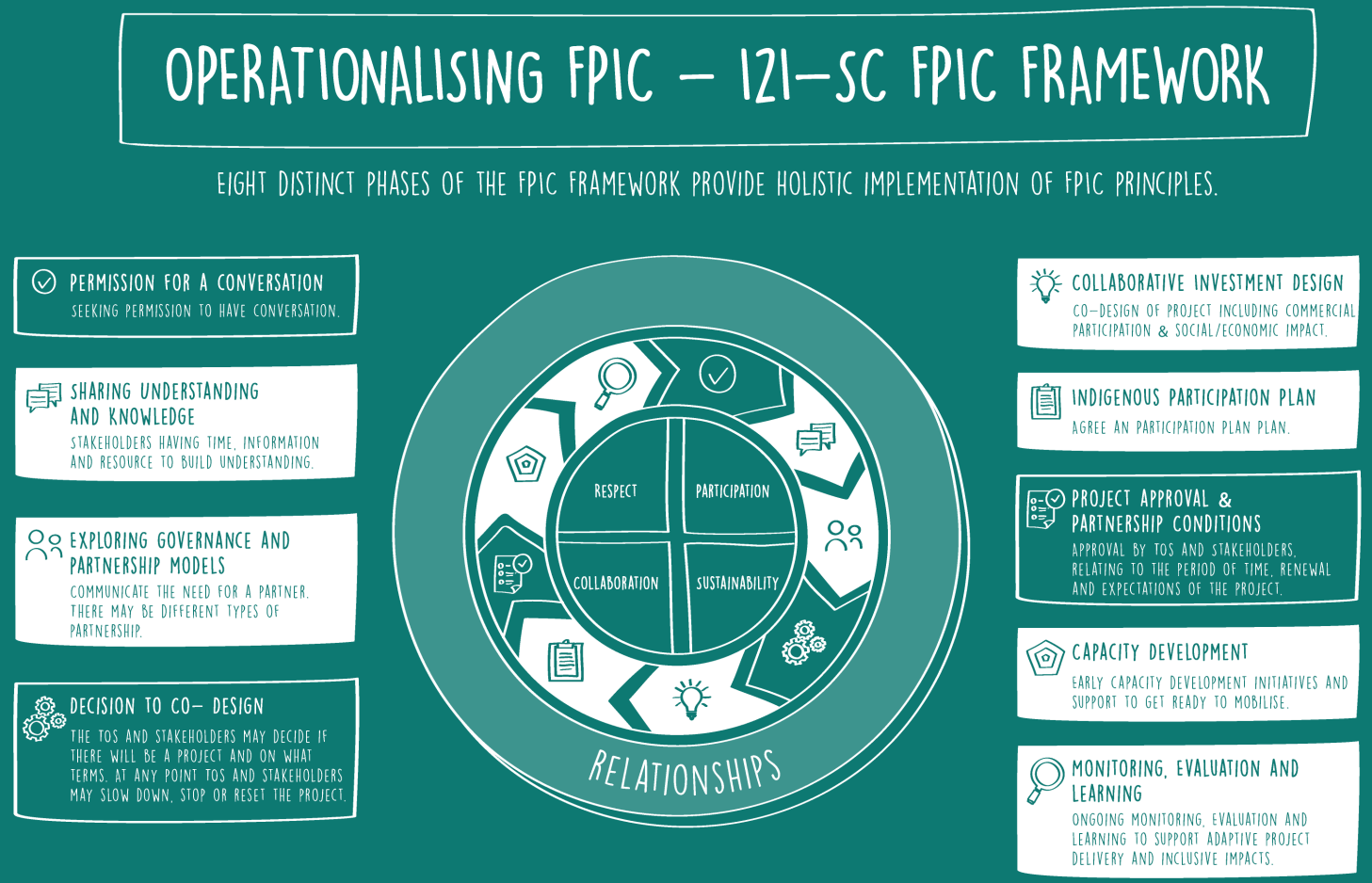
How do we move to co-design?

The next stage in the FPIC process is to co-design the proposed project.

In the co-design phase, we propose to carry out more consultation and produce an Investment Design and an Indigenous Participation Plan.

We would then seek stakeholder approval for the project to go ahead based on 'partnership conditions'.

Question: Are you comfortable to move to the co-design phase, with a co-design workshop in Jan/Feb 2023?



Thank You

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