

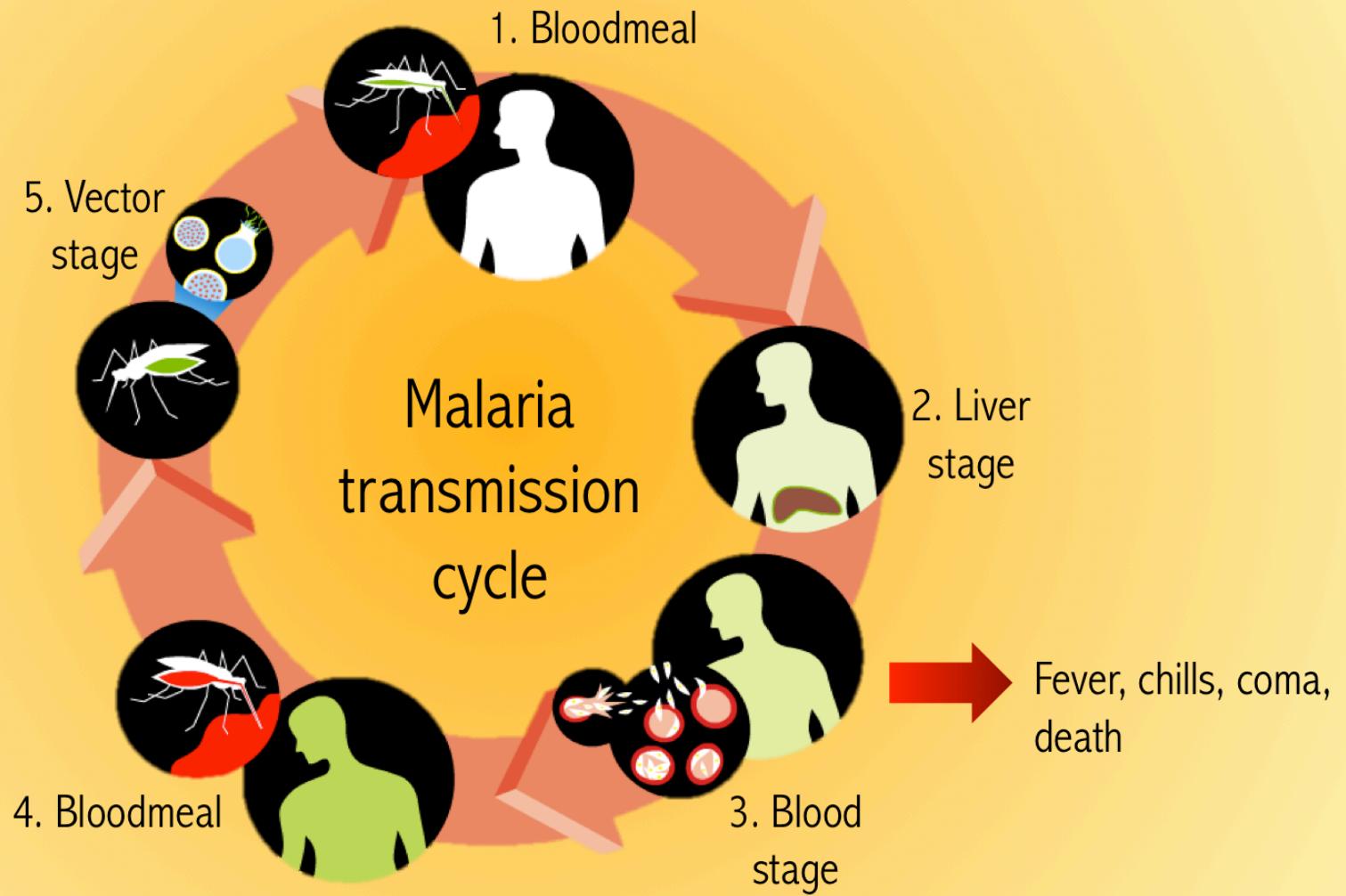
Evaluation of outdoor insecticide-impregnated barriers: a new intervention for malaria control in the Solomon Islands



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University of Notre Dame
MENTOR: Neil Lobo

Photograph by Neil Lobo

MALARIA



MALARIA

in the Solomon Islands

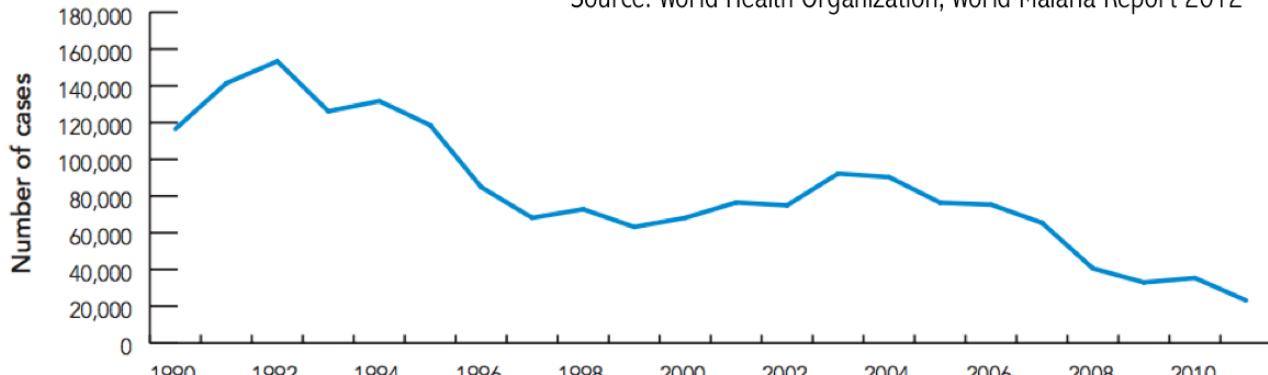


MALARIA

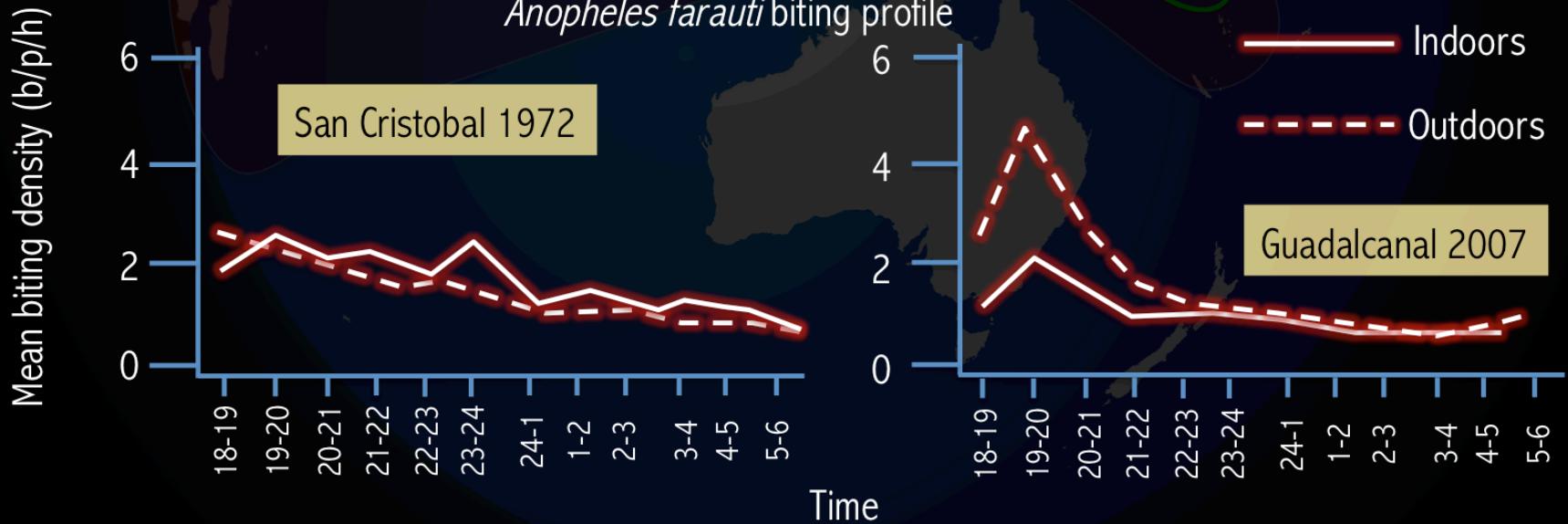
in the Solomon Islands

Reported Malaria Cases

Source: World Health Organization, World Malaria Report 2012



Anopheles farauti biting profile



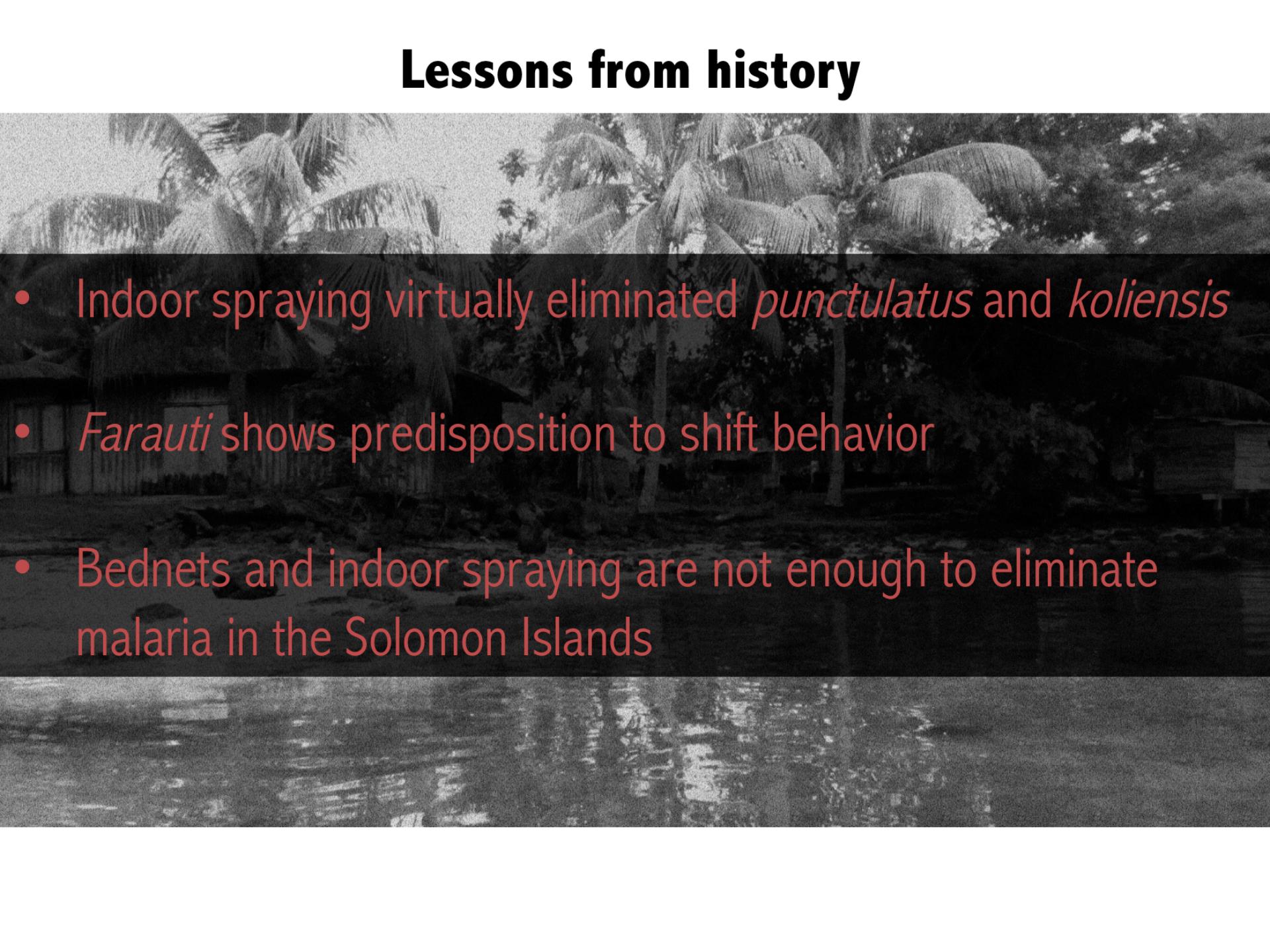
Source: Taylor (1975) and Malaria Transmission Consortium

Current methods of vector control

1. Insecticide-treated bednets
2. Indoor residual spraying



Lessons from history

A black and white photograph showing a tropical scene. In the foreground, there's a grassy area with some low-lying plants. Behind it, several large, curved palm trees stand prominently. Further back, there are more trees and what appears to be a small body of water or a clearing. In the distance, there are rolling hills or mountains covered in vegetation. The overall atmosphere is one of a rural, possibly Pacific Island, environment.

- Indoor spraying virtually eliminated *punctulatus* and *koliensis*
- *Farauti* shows predisposition to shift behavior
- Bednets and indoor spraying are not enough to eliminate malaria in the Solomon Islands

RESEARCH GOAL

Design and evaluate an intervention to reduce malaria in the Solomon Islands while avoiding the limitations of traditional vector control.

Our intervention:

Insecticide-impregnated barriers



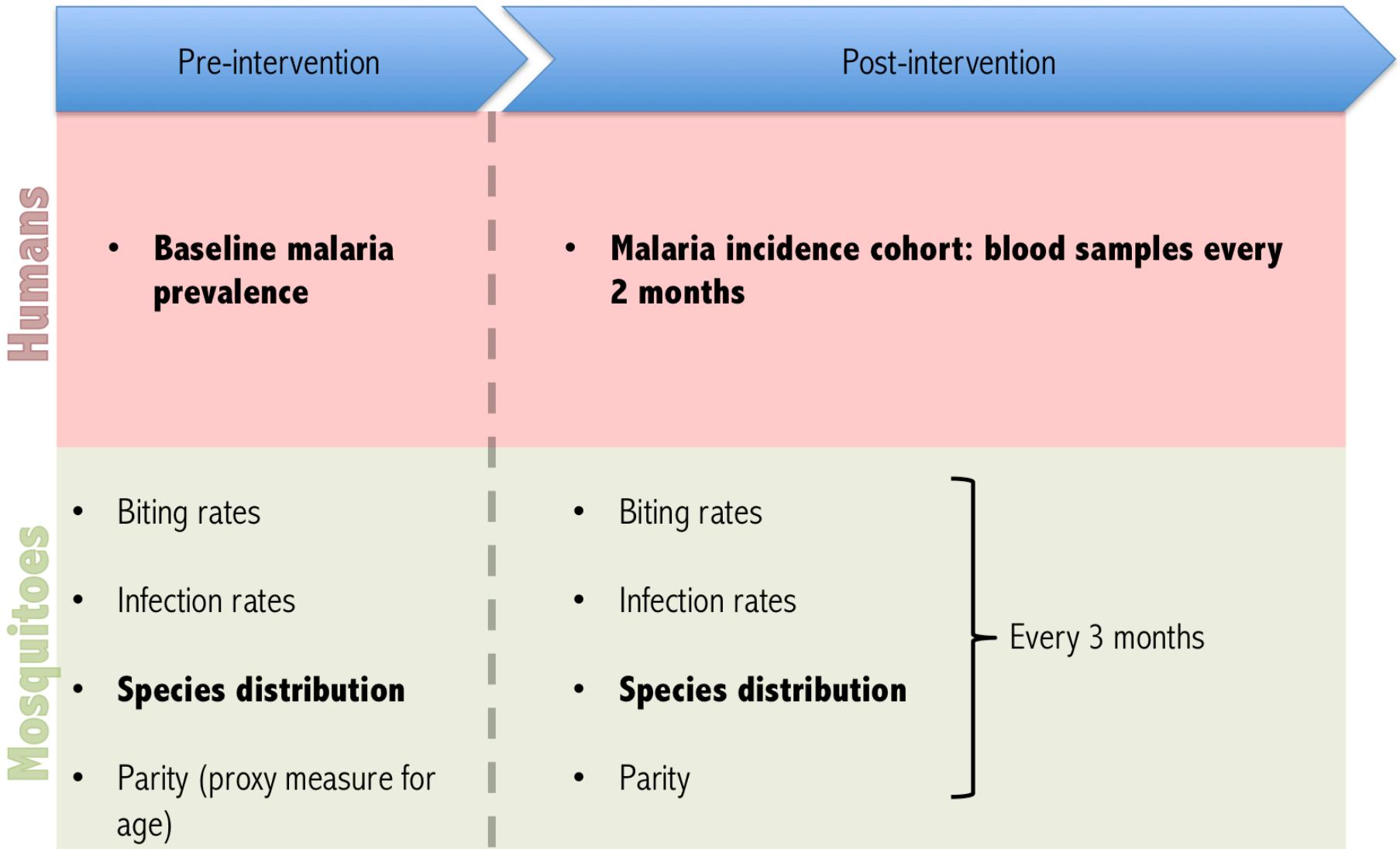
Photograph by Neil Lobo

Edge of village

IIB

Breeding site

Our study



Field Work





Blood collection for baseline prevalence

Photograph by Neil Lobo



Recruiting incidence cohort



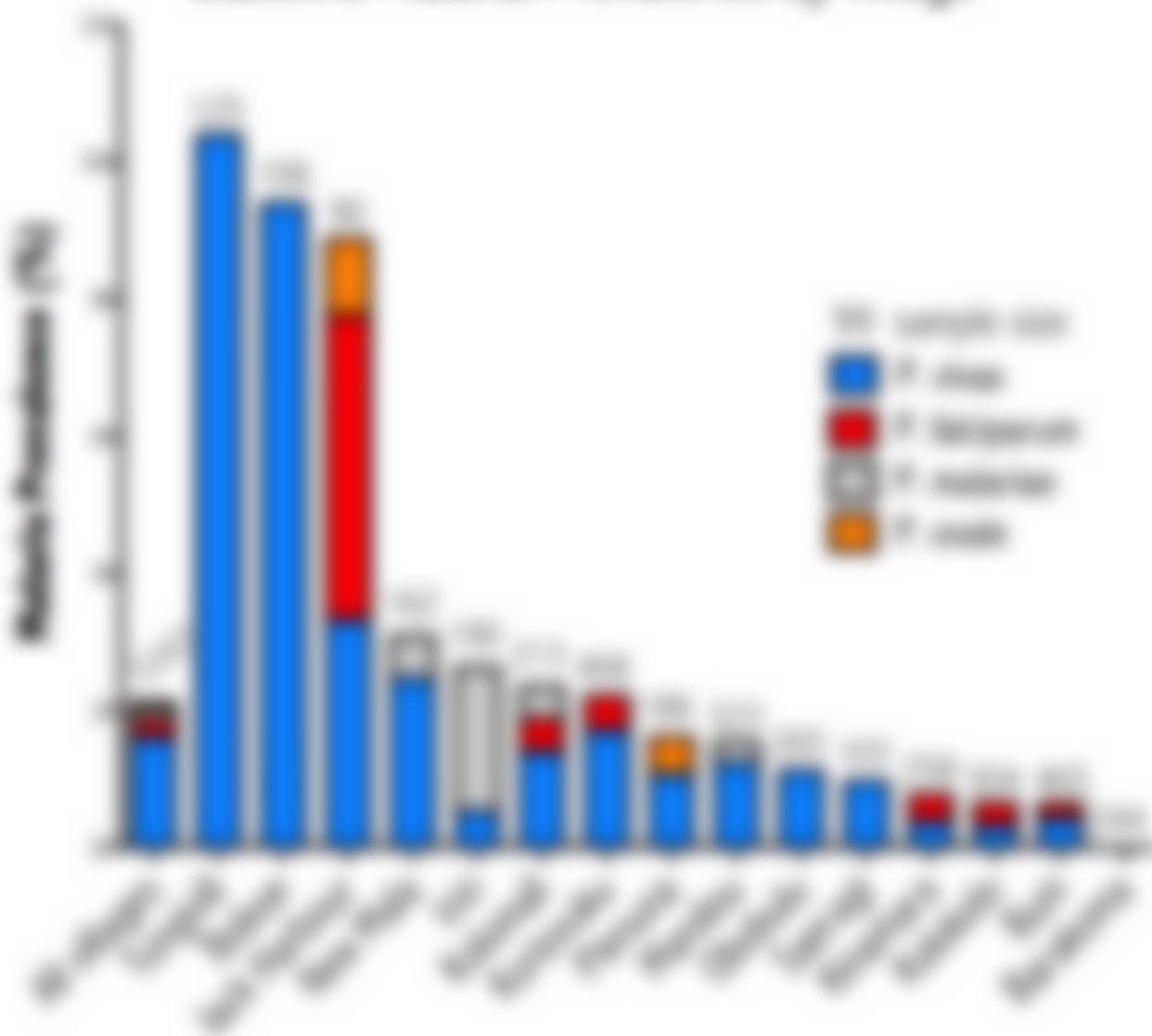
Human landing catches

Photograph by Danyal Odabassi

Constructing insecticide barriers



Reading Poetry: Procedure by Step



Results:

Mosquito collections

- Collected in Human Landing Catches
- Identified by ITS2 ribosomal gene sequence

Results:

Mosquito collections

Collection date	Collection location	Number of mosquitoes	Number of females	Number of males	Number of unfed females	Number of unfed males	Number of unfed unfed
1998-01-01	Site A	100	50	50	25	25	50
1998-01-02	Site B	150	75	75	35	35	80
1998-01-03	Site C	200	100	100	50	50	100
1998-01-04	Site D	180	90	90	40	40	90
1998-01-05	Site E	120	60	60	20	20	60
1998-01-06	Site F	140	70	70	30	30	70
1998-01-07	Site G	160	80	80	40	40	80
1998-01-08	Site H	130	65	65	25	25	65
1998-01-09	Site I	170	85	85	45	45	85
1998-01-10	Site J	190	95	95	55	55	95
1998-01-11	Site K	110	55	55	20	20	55
1998-01-12	Site L	130	65	65	25	25	65
1998-01-13	Site M	150	75	75	35	35	75
1998-01-14	Site N	170	85	85	45	45	85
1998-01-15	Site O	190	95	95	55	55	95
1998-01-16	Site P	100	50	50	25	25	50
1998-01-17	Site Q	120	60	60	20	20	60
1998-01-18	Site R	140	70	70	30	30	70
1998-01-19	Site S	160	80	80	40	40	80
1998-01-20	Site T	180	90	90	45	45	90
1998-01-21	Site U	100	50	50	25	25	50
1998-01-22	Site V	120	60	60	20	20	60
1998-01-23	Site W	140	70	70	30	30	70
1998-01-24	Site X	160	80	80	40	40	80
1998-01-25	Site Y	180	90	90	45	45	90
1998-01-26	Site Z	100	50	50	25	25	50
1998-01-27	Site AA	120	60	60	20	20	60
1998-01-28	Site BB	140	70	70	30	30	70
1998-01-29	Site CC	160	80	80	40	40	80
1998-01-30	Site DD	180	90	90	45	45	90
1998-01-31	Site EE	100	50	50	25	25	50
1998-02-01	Site FF	120	60	60	20	20	60
1998-02-02	Site GG	140	70	70	30	30	70
1998-02-03	Site HH	160	80	80	40	40	80
1998-02-04	Site II	180	90	90	45	45	90
1998-02-05	Site JJ	100	50	50	25	25	50
1998-02-06	Site KK	120	60	60	20	20	60
1998-02-07	Site LL	140	70	70	30	30	70
1998-02-08	Site MM	160	80	80	40	40	80
1998-02-09	Site NN	180	90	90	45	45	90
1998-02-10	Site OO	100	50	50	25	25	50
1998-02-11	Site PP	120	60	60	20	20	60
1998-02-12	Site QQ	140	70	70	30	30	70
1998-02-13	Site RR	160	80	80	40	40	80
1998-02-14	Site SS	180	90	90	45	45	90
1998-02-15	Site TT	100	50	50	25	25	50
1998-02-16	Site UU	120	60	60	20	20	60
1998-02-17	Site VV	140	70	70	30	30	70
1998-02-18	Site WW	160	80	80	40	40	80
1998-02-19	Site XX	180	90	90	45	45	90
1998-02-20	Site YY	100	50	50	25	25	50
1998-02-21	Site ZZ	120	60	60	20	20	60
1998-02-22	Site AAA	140	70	70	30	30	70
1998-02-23	Site BBB	160	80	80	40	40	80
1998-02-24	Site CCC	180	90	90	45	45	90
1998-02-25	Site DDD	100	50	50	25	25	50
1998-02-26	Site EEE	120	60	60	20	20	60
1998-02-27	Site FFF	140	70	70	30	30	70
1998-02-28	Site GGG	160	80	80	40	40	80
1998-02-29	Site HHH	180	90	90	45	45	90
1998-03-01	Site III	100	50	50	25	25	50
1998-03-02	Site JJJ	120	60	60	20	20	60
1998-03-03	Site KKK	140	70	70	30	30	70
1998-03-04	Site LLL	160	80	80	40	40	80
1998-03-05	Site MLL	180	90	90	45	45	90
1998-03-06	Site NLL	100	50	50	25	25	50
1998-03-07	Site OLL	120	60	60	20	20	60
1998-03-08	Site PLL	140	70	70	30	30	70
1998-03-09	Site QLL	160	80	80	40	40	80
1998-03-10	Site RLL	180	90	90	45	45	90
1998-03-11	Site SLL	100	50	50	25	25	50
1998-03-12	Site TLL	120	60	60	20	20	60
1998-03-13	Site ULL	140	70	70	30	30	70
1998-03-14	Site VLL	160	80	80	40	40	80
1998-03-15	Site WLL	180	90	90	45	45	90
1998-03-16	Site XLL	100	50	50	25	25	50
1998-03-17	Site YLL	120	60	60	20	20	60
1998-03-18	Site ZLL	140	70	70	30	30	70
1998-03-19	Site AAAA	160	80	80	40	40	80
1998-03-20	Site BBBB	180	90	90	45	45	90
1998-03-21	Site CCCC	100	50	50	25	25	50
1998-03-22	Site DCCC	120	60	60	20	20	60
1998-03-23	Site ECCC	140	70	70	30	30	70
1998-03-24	Site FCCC	160	80	80	40	40	80
1998-03-25	Site GCCC	180	90	90	45	45	90
1998-03-26	Site HCCC	100	50	50	25	25	50
1998-03-27	Site ICCC	120	60	60	20	20	60
1998-03-28	Site JCCC	140	70	70	30	30	70
1998-03-29	Site KCCC	160	80	80	40	40	80
1998-03-30	Site LCCC	180	90	90	45	45	90
1998-03-31	Site MCCC	100	50	50	25	25	50
1998-04-01	Site NCCC	120	60	60	20	20	60
1998-04-02	Site OCCC	140	70	70	30	30	70
1998-04-03	Site PCCC	160	80	80	40	40	80
1998-04-04	Site QCCC	180	90	90	45	45	90
1998-04-05	Site RCCC	100	50	50	25	25	50
1998-04-06	Site SCCC	120	60	60	20	20	60
1998-04-07	Site TCCC	140	70	70	30	30	70
1998-04-08	Site UCCC	160	80	80	40	40	80
1998-04-09	Site VCCC	180	90	90	45	45	90
1998-04-10	Site WCCC	100	50	50	25	25	50
1998-04-11	Site XCCC	120	60	60	20	20	60
1998-04-12	Site YCCC	140	70	70	30	30	70
1998-04-13	Site ZCCC	160	80	80	40	40	80
1998-04-14	Site AAAA	180	90	90	45	45	90
1998-04-15	Site BBBB	100	50	50	25	25	50
1998-04-16	Site CCCC	120	60	60	20	20	60
1998-04-17	Site DCCC	140	70	70	30	30	70
1998-04-18	Site ECCC	160	80	80	40	40	80
1998-04-19	Site FCCC	180	90	90	45	45	90
1998-04-20	Site GCCC	100	50	50	25	25	50
1998-04-21	Site HCCC	120	60	60	20	20	60
1998-04-22	Site ICCC	140	70	70	30	30	70
1998-04-23	Site JCCC	160	80	80	40	40	80
1998-04-24	Site KCCC	180	90	90	45	45	90
1998-04-25	Site LCCC	100	50	50	25	25	50
1998-04-26	Site MCCC	120	60	60	20	20	60
1998-04-27	Site NCCC	140	70	70	30	30	70
1998-04-28	Site OCCC	160	80	80	40	40	80
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1998-04-30	Site QCCC	100	50	50	25	25	50
1998-05-01	Site RCCC	120	60	60	20	20	60
1998-05-02	Site SCCC	140	70	70	30	30	70
1998-05-03	Site TCCC	160	80	80	40	40	80
1998-05-04	Site UCCC	180	90	90	45	45	90
1998-05-05	Site VCCC	100	50	50	25	25	50
1998-05-06	Site WCCC	120	60	60	20	20	60
1998-05-07	Site XCCC	140	70	70	30	30	70
1998-05-08	Site YCCC	160	80	80	40	40	80
1998-05-09	Site ZCCC	180	90	90	45	45	90
1998-05-10	Site AAAA	100	50	50	25	25	50
1998-05-11	Site BBBB	120	60	60	20	20	60
1998-05-12	Site CCCC	140	70	70	30	30	70
1998-05-13	Site DCCC	160	80	80	40	40	80
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1998-05-16	Site GCCC	120	60	60	20	20	60
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1998-06-12	Site HCCC	160	80	80	40	40	80
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1998-06-17	Site MCCC	160	80	80	40	40	80
199							

Conclusions

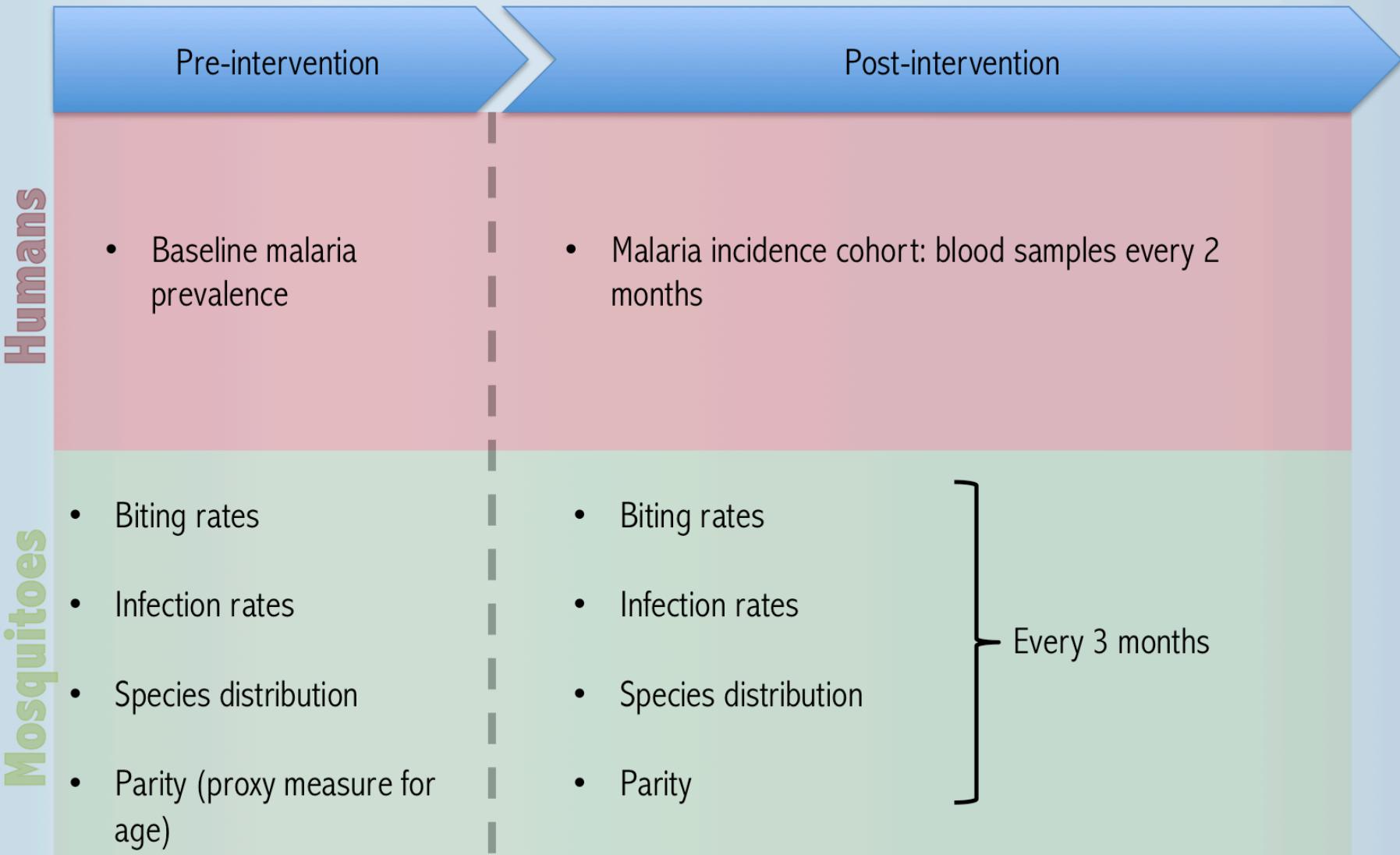
Peruilles

- Poultry transmission is low, but prevalent in Western Province
- 6 species of human Plasmodium found
- Not enough time has passed to make meaningful comparisons between 1998 and current findings

Barrios

- A diversity of Anopheline, *Brasil* will be only known vector
- Low densities observed in Barrio Marques, which has higher malaria prevalence and more *A. darlingi*

Future Work





Acknowledgments

ND

Neil Lobo
Diego Echeverri-Garcia
Victoria Makuru
Jenna Davidson
Katie Cybulski
Frank Collins
Eck Institute for Global Health
Michelle Whaley

Dominic Chaloner
Biology REU Program
James Cook
Danyal Odabasi
Tom Burkot
Tanya Russell

Hugo Bugoro

Field team

Oscar, Spencer, Halo, George, Leni, Colson

Ento team

Bob, Allen, Lesli, Hata, Edi

Solomon Islands Ministry of Health

Hedrick Reuben

Questions?

