

Frequent blood feeding enables insecticide-treated nets to reduce transmission by mosquitoes that bite predominately outdoors

Description of data archiving for analysis

A series of experiments examining the bionomic parameters of *Anopheles farauti* were conducted on Ngella Sule Island in Central Province, Solomon Islands. This work commenced on 27/8/2011 and was completed on 23/07/2017. The data from the entire set of experiments has been archived into one database, which has been analysed over a series of manuscripts. Each experiment can be quickly identified using the “ProjectID” which runs from MTC01 to MTC30 (MTC14 was skipped).

All night biting profile of *An. farauti*

Parameter	Details
<i>Aim</i>	To profile the indoor and outdoor biting profile of <i>An. farauti</i>
<i>Dates</i>	5 consecutive nights from 24 th – 28 th July 2012
<i>Table</i>	Adult and Molecular
<i>ProjectID</i>	MTC07
<i>Trapping method</i>	HLC stationed inside and outside of houses
<i>Number of stations</i>	5 stations labelled A to E
<i>Collection times</i>	Hourly from 18.00 to 06.00 hours. Note that the data for the first hour of the night is broken down by 6-6.30pm and 6.30-7pm.
<i>Analysed</i>	The analysis was extended to calculate the proportion of human contact with mosquito bites occurring indoors (π_i). To determine this, the number of people outdoors in the HLC area was counted hourly from 18.00 to 06.00 h each night for 14 consecutive nights beginning on 23 rd Nov 2011 and this data is recorded in the Human_Movement_Census table.

Seasonality of *An. farauti*

Parameter	Details
<i>Aim</i>	To profile the seasonality of <i>An. farauti</i> biting densities
<i>Dates</i>	A 23 month period from August 2011 – February 2014
<i>Table</i>	Adult, Dissection and Molecular
<i>ProjectID</i>	All
<i>Trapping method</i>	HLC stationed outside of houses. All HLC collections made inside of houses were excluded from the analysis.
<i>Number of stations</i>	Usually 10 stations labelled A to J. However for some project codes the number of stations is more or less than 10 and the labelling differs. During MTC05 additional collections outside of the balanced experimental design were made by the managing research scientists in an attempt to boost the number of marked mosquitoes recaptured. These additional collections were labelled as Tanya, Bob, Tom, Allen and John and were excluded from the analysis.
<i>Collection times</i>	Hourly from 18.00 to 00.00 hours. Note that the data for the first hour of the night is broken down by 6-6.30pm and 6.30-7pm. Additionally, for some ProjectIDs, mosquitoes were collected from 00.00 to 06.00 and this data is excluded for a standardised comparison.

Duration of the gonotrophic cycle

Parameter	Details
<i>Aim</i>	To determine the length of time from blood feeding to oviposition of <i>An. farauti</i>
<i>Dates</i>	Bloodfed mosquitoes were placed in oviposition cups on different trips. The dates ranged from 27/11/2011 to 8/12/2012.
<i>Table</i>	Oviposition
<i>ProjectID</i>	MTC02 and MTC12
<i>Analysed</i>	Hour laid post feed and night laid

Duration of the feeding cycle

Parameter	Details
<i>Aim</i>	To estimate the length of the gonotrophic cycle for <i>An. farauti</i> under field conditions with mark-release-recapture.
<i>Dates</i>	11 consecutive nights from 29 th November – 9 th December 2012
<i>Table</i>	Adult, Molecular and Releases
<i>ProjectID</i>	MTC12
<i>Trapping method</i>	HLC stationed outside of houses.
<i>Number of stations</i>	16 stations labelled A to P
<i>Collection times</i>	Hourly from 18.00 to 00.00 hours. Note that the data for the first hour of the night is broken down by 6-6.30pm and 6.30-7pm.
<i>Releases</i>	Blue = night 1 (29/11/2012) Pink = night 2 (30/11/2012) Yellow = night 3 (01/12/2012)
<i>Analysis</i>	During MTC12, mosquitoes were also captured on fences and in human baited tents. The fences were labelled 1 to 4. The human baited tents were labelled A to H. The human baited tent experiment was run for two nights on the 27 th and 28 th Nov 2012 and was completed before any mosquitoes were released. After the gonotrophic cycle experiment was completed on the 9 th Dec, the location of the HLC collectors was changed and another two nights of HLC was conducted (10 and 11 Dec). I think that the idea was to have a better look at the distribution of biting throughout the village. Mosquitoes were not checked for dust on these two nights as recaptures had really tapered off by this point in time. These two nights of collections were not included in the gonotrophic cycle analysis.

Data dictionary for Adult table (this table records the results of mosquito collections)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
Serial	Number	Page number (serial number on data collection sheet)
FormRow	Number	Unique identifier for each row on the paper data collection form
Province	Text	Province Name
Island	Text	Island name
Village	Text	Village name
Date	Date/Time	Date
Trap	Text	Trap type
TrapDetail	Text	Details of the trap (ie In vs Out or Swamp vs Village)
Station	Text	Station name (Host number/ site/ HLC number)
CollectionTime	Text	Collection time window
TotalFemaleFarauti	Number	Total female An farauti captured
UnmarkTotal	Number	Total unmarked An farauti captured
BlueTotal	Number	Total blue An farauti captured
PinkTotal	Number	Total pink An farauti captured
YellowTotal	Number	Total yellow An farauti captured
Notes	Text	Notes

Data dictionary for Dissection table (this table records the results of mosquito dissections for parity and insemination)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
Serial	Number	Page number (serial number on data collection sheet)
FormRow	Number	Unique identifier for each row on the paper data collection form
Province	Text	Province Name
Island	Text	Island name
Village	Text	Village name
Date	Date/Time	Date
Trap	Text	Trap type
TrapDetail	Text	Details of the trap (ie In vs Out or Swamp vs Village)
CollectionTime	Text	Collection time window
Station	Text	Station name (Host number/ site/ HLC number)
Inseminated	Number	1 (yes) or 0 (no)
Nullipar	Number	1 = yes
Parous	Number	1 = yes
Parity	Text	=IF(Nullipar=1,"Nulliparous",(IF(Parous=1,"Parous","")))
Notes	Text	Notes

Data dictionary for Molecular table (this table records the results of laboratory analyses)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
Laboratory	Text	Identifier of the laboratory where the analysis was conducted (AMI or UQ)
LabID	Text	Identifier for each mosquito used in the laboratory
Stage	Text	Records life cycle stage of sample: larvae vs adult
Province	Text	Province name
Village	Text	Village name
SourceForm	Text	The form where the samples were sourced from (trap or dissection)
Serial	Number	Page number of the source form (serial number on data collection sheet)
FormRow	Number	Unique identifier for each row on the paper source form
MRRLLabel	Text	Details of Mark-Release-Recapture labels
Trap	Text	Trap type
TrapDetail	Text	Details of the trap (ie In vs Out or Swamp vs Village)
CollectionTime	Text	Collection time window
Station	Text	Station name (Host number/site/HLC number)
Date	Date/Time	Date
Sex	Text	Sex of the mosquito
MorphoID	Text	Morphological identification of the mosquito
Species (PCR)	Text	Molecular identification to species
Sporo1 (PCR)	Text	Initial sporozoite identification
Sporo2 (PCR)	Text	Second sporozoite identification
SporoFINAL (PCR)	Text	Final sporozoite identification
Notes	Text	Notes

Data dictionary for Releases table (this table records the release of marked mosquitoes)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
Date	Date/Time	Date
CollectionTime	Text	Collection time window
Trap	Text	Trap type
TrapDetail	Text	Details of the trap (ie In vs Out or Swamp vs Village)
Colour	Text	Colour that mosquitoes were dusted
No released	Number	Number of An farauti released per colour

Data dictionary for GIS Locations table (this table records the location of mosquito collections)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
Trap	Text	Trap type
TrapDetail	Text	Details of the trap (ie In vs Out or Swamp vs Village)
Station	Text	Station name (Host number/site/HLC number)
Latitude	Number	Latitude in decimal degrees
Longitude	Number	Longitude in decimal degrees
Date	Date/Time	Date that the site was geolocated
Notes	Text	Notes

Data dictionary for Project Details table (this table records the generalised details of each experiment)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
ProjectName	Text	Title for each project
Investigating scientist	Text	Name of the scientist to contact for more details
DateStart	Date/Time	Date that the project commenced
DateCompleted	Date/Time	Date that the project was completed

Data dictionary for Oviposition table (this table records the generalised details of each experiment)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
MosqID	Number	Identifier for each mosquito
DateFed	Date/Time	Date which the mosquito was fed
DateLaid	Date/Time	Date which the mosquito laid eggs
HrLaidPostFeed	Number	Number of hours from feeding to laying eggs
NightLaid	Number	Number of nights from feeding to laying eggs
Host	Text	Host on which the mosquito was fed
FedStatus	Text	Visual examination of the abdomen after feeding
NoEggs	Number	Number eggs that the mosquito laid
Notes	Text	Notes

Data dictionary for Human Movement Census table (this table records the number of people who were outdoors in the area where HLC was conducted)

Parameter	Type	Details
ProjectID	Text	Identifier for the specific project
Serial	Number	Page number (serial number on data collection sheet)
Date	Date/Time	Date
Time	Text	Collection time window
No humans	Number	Number of humans outdoors