

Table S1. Model parameters and values. T represents temperature in temperature-dependent parameters. Table adapted from Hancock *et al.* (2009) and Mordecai *et al.* (2013).

Parameter	Description	Value	Species	Source
ε	adult recruitment rate to S_1 class	0.2 day^{-1}		Hancock <i>et al.</i> (2009)
c	daily probability of fungal infection	$1 - e^{-F}$		
F	rate of fungal infection	varies (day^{-1})		
β, μ_F	shape and rate parameters describing relationship between time since fungal infection and risk of mosquito mortality	see Table S2	<i>An. stephensi</i>	
x	proportion of humans with transmissible malaria	0.5		Hancock <i>et al.</i> (2009)
b^2	vector competence	$-0.54T^2 + 25.2T - 206$	<i>An. quadrimaculatus</i> and <i>P. vivax</i>	Mordecai <i>et al.</i> (2013)
μ	background mosquito mortality rate	$-\ln(-0.000828T^2 + 0.0367T + 0.522)$	<i>An. gambiae</i>	Mordecai <i>et al.</i> (2013)
a	mosquito biting rate	$0.000203T(T - 11.7)(42.3 - T)^{0.5}$	<i>An. pseudopunctipennis</i>	Mordecai <i>et al.</i> (2013)
t_E	malarial extrinsic incubation period (EIP)	<i>P. falciparum:</i> $1/[0.000111T(T - 14.7)(34.4 - T)^{0.5}]$	<i>An. gambiae,</i> <i>An. culicifacies,</i> <i>An. stephensi,</i> <i>An. quadrimaculatus,</i> <i>An. atroparvus</i>	Mordecai <i>et al.</i> (2013)
		<i>P. vivax:</i> $1/[0.000126T(T - 14.244)(34.4 - T)^{0.5}]$	<i>An. culicifacies,</i> <i>An. atabacensis,</i> <i>An. freeborni,</i> <i>An. quadrimaculatus,</i> <i>An. stephensi,</i> <i>An. maculatus</i>	Cator <i>et al.</i> (2013)