Parameter	Interpretation	Units	default
	Demographic parameters		
T_L	Larval duration	days	10
μ_J	Larval density independent mortality	day^{-1}	0.05
μ_A	Adult mortality	day^{-1}	0.125
θ	Oviposition rate	$(\text{mated female})^{-1}(\text{day})^{-1}$	9
β	Density of males when mating rate = $1/2(\text{unmated female})^{-1}(\text{day})^{-1}$	-	100
	Carrying capacity $\left[\alpha(x,t) = \alpha_0 + \alpha_1(1 - e^{-\phi r(x,t)}) + \alpha_2(1 - e^{-\kappa[W_p(x)+W_n(x)(1-e^{-\delta r(x,t)})]})\right]$		
α_0	Baseline contribution	-	0
α_1	Maximum contribution from rain *per se*	-	2×10^5
α_2	Maximum contribution from water bodies	-	2×10^5
ϕ	Increase in $\alpha(x,t)/\alpha_1$ per mm rain per week (when rainfall low)	$(\text{mm rain})^{-1}\text{week}^{-1}$	0.03
κ	Increase in $\alpha(x,t)/\alpha_2$ per km standing water (within 5km; when water bodies rare)	$(\text{km water})^{-1}$	0.8
δ	Increase in length of standing water from non-permanent waterways per km non-permanent waterways (within 5km) per mm rain per week (when rainfall low)	$(\text{mm rain})^{-1}\text{week}^{-1}$	0.03
	Spatial parameters		
d	Probability adult disperses to a connected village	day^{-1}	0.001
L_d	Maximum distance at which populations are connected to each other	km	10
L_w	Maximum distance at which populations are connected to water bodies	km	5
	Aestivation		
t_{A_1}	Day mated females begin aestivation	date	27^{th} October
t_{A_2}	Day mated females cease aestivation	date	16^{th} December
t_{A_3}	Day mated females begin emerging from aestivation	date	20^{th} May
t_{A_4}	Day mated females finish emerging from aestivation	date	19^{th} June
ψ	Probability female goes into aestivation	day^{-1}	0
μ_E	Probability female dies during aestivation	-	0.95
	Long distance migration		
t_{D_1}	Day mated females begin NE→SW migration	date	1^{st} January
t_{D_2}	Day mated females end NE→SW migration	date	30^{th} January
t_{D_3}	Day mated females begin SW→NE migration	date	20^{th} July
t_{D_4}	Day mated females end SW→NE migration	date	19^{th} August
d_M	Probability female migrates	day^{-1}	0
μ_m	Probability female dies during migration	-	0.95

Table S1: Model parameters