########################## Parameter priors ##########################

lambda1 = 0.85

lambda2 = 1

sh = 1

nsim = 1000

N =

################# How many mosquitoes? -Poisson distribution #############

for(pt in 15:100){

p0<-0.01\*pt

p<-list()

for(k in 1:nsim){

p[[k]]<-vector()

p[[k]][1]<-p0

j=1

repeat{

if(p[[k]][j]>0 & p[[k]][j]<1 & j<10000){

temp1<-sum(rpois(n=N\*p[[k]][j],lambda1))

temp2<-sum(rpois(n=N\*(1-(1+sh)\*p[[k]][j]+sh\*p[[k]][j]^2),lambda2))

if (temp1+temp2>0) p[[k]][j+1]<-temp1/(temp1+temp2) else p[[k]][j+1]<-0

j=j+1

}

else break

}

}

fix<-length(which(unlist(p)==1))/nsim

if (fix>=0.95) {

cat(N,p0,fix,'\n',file='mosq1\_p.txt',sep=' ',append=T)

break

}

}

########### How many mosquitoes? -negative binomial distribution ##########

library(MASS)

for(ta in c(1:10,seq(20,100,10),seq(120,200,20))){

theta=0.01\*ta

for(pt in 15:100){

p0<-0.01\*pt

p<-list()

for(k in 1:nsim){

p[[k]]<-vector()

p[[k]][1]<-p0

j=1

repeat{

if(p[[k]][j]>0 & p[[k]][j]<1 & j<10000){

temp1<-sum(rnegbin(n=N\*p[[k]][j],mu=lambda1,theta=theta))

temp2<-sum(rnegbin(n=N\*(1-(1+sh)\*p[[k]][j]+sh\*p[[k]][j]^2),mu=lambda2,theta=theta))

if (temp1+temp2>0) p[[k]][j+1]<-temp1/(temp1+temp2) else p[[k]][j+1]<-0

j=j+1

}

else break

}

}

fix<-length(which(unlist(p)==1))/nsim

if (fix>=0.95) {

cat(N,theta,p0,fix,'\n',file='mosq1.txt',sep=' ',append=T)

break

}

}

}

####################################################################