APPENDIX

Appendix S1: WinBUGS model for analysis of *Clidemia hirta* abundance and disturbance by wild pigs at Pasoh Forest Reserve, Peninsular Malaysia

model {

  for (i in 1:N.section) {
    CLIDEMIA[i] ~ dpois(lambda[i])
    lambda[i] <- exp(a[1, Tr[i]] + d[1] * DISTANCE[i] + ENVIRONMENT[1, i])
    DISTURBANCE[i] ~ dbin(p[i], N.dist)
    disturbance[i] ~ dbin(p[i], N.dist)
    logit(p[i]) <- a[2, Tr[i]] + d[2] * DISTANCE[i] + ENVIRONMENT[2, i]
  }

  for (j in 1:2) {
    ENVIRONMENT[j, i] ~ dnorm(m[j, i], tau[j])
  }

  m[1, i] <- (
    (ENVIRONMENT[1, LeftRight[i, 1]]
     + ENVIRONMENT[1, LeftRight[i, 2]]) * (c[1] - 0.5)
     + b[1] * (disturbance[i] - Mean.dist)
  )

  m[2, i] <- (
    (ENVIRONMENT[2, LeftRight[i, 1]]
     + ENVIRONMENT[2, LeftRight[i, 2]]) * (c[2] - 0.5)
\[
\text{for (k in 1:N.transect) { }
  \text{for (j in 1:2) \{a[j, k] ~ dnorm(0, Tau.noninformative)\}}
}\]

\[
\text{}}
\]

\[
\text{for (j in 1:N.b) \{b[j] ~ dnorm(0, Tau.noninformative)\}}
\]

\[
\text{for (j in 1:N.c) \{c[j] ~ dbeta(P.beta, P.beta)\}}
\]

\[
\text{for (j in 1:N.d) \{d[j] ~ dnorm(0, Tau.noninformative)\}}
\]

\[
\text{for (j in 1:2) \{tau[j] ~ dgamma(P.gamma, P.gamma)\}}
\]

\[
\text{}}
\]

†1: "N.Section" = total number of 5 m survey sections (3 transects x 1000 m = 600)
†2: Clidemia abundance
†3: "DISTANCE" = centered distance from forest to Oil Plam edge (unit = 1 km)
†4: “a” = intercept estimated at each transect which is expressed by “Tr[i]”
†5: ENVIRONMENT = virtual variable produced at each section as an assemblage of environmental factors
†6: Disturbance by Wild Pigs
†7: “DISTURBANCE” = observed value. "N.dist" = number of levels of disturbance
†8: "disturbance" = predicted value which is used in model of abundance.
†9: j for model of abundance and of disturbance
†10: Linear predictor for “ENVIRONMENT” in the abundance model
†11: "LeftRight[i, ]" gives the order of neighboring two sections
†12: “c” gives the intensity of spatial auto-correlation as determining the weight of
“ENVIRONMENT” to be shared by neighboring section (smoothing process)

†13: Centered “disturbance” predicted by †8
†14: "GAP" = presence of canopy gap
†15: "SWAMP" = presence of swamp
†16: Linear predictor for “ENVIRONMENT” in the disturbance model
†17: “N.transect” = the number of transects
†18: Prior distribution for intercept
†19: Prior distribution of coefficients
†20: Hyperprior distribution of the precision of “ENVIRONMENT”