A. M. Ellison. 2004. Bayesian inference in ecology. *Ecology Letters* 7: 509-520.

I. Corrigendum

Michael McCarthy (Melbourne, Australia) noted that the precision of the parameter estimates in Table 4 were higher for the posterior modes when informative priors were used relative to when non-informative priors were used. This makes little sense, as reasonable information should increase precision. It appears that the numbers in the 2nd and 3rd colums were transposed during final editing and production.

More importantly, Dr. McCarthy pointed out that better convergence of the MCMC estimates could be achieved if the data were centered (by subtracting the mean from the observed value) prior to analysis. This removes the strong correlation between the intercept and the parameter $ß_0$ and $ß_1$. This also results in different estimates of these two parameters: $ß_0$ = 9.875 (se = 1.42) and $ß_1$ = -0.18 (se = 0.03).

II. WinBUGS code for the ant example

```
model
{
# This version of the model uses data that have been centered

ml <- mean(lat[])
me <- mean(elev[])

for( i in 1 : N )
{
richness[i] ~ dpois(mu[i])
log(mu[i]) <- alpha + beta[1]*(lat[i]-ml) + beta[2]*(elev[i]-me) + beta[3]*habitat[i]
}

intercept <- alpha - beta[1]*ml - beta[2]*me

#Priors: the first set is non-informative, the second set is informative. Comment out (use the "#" sign) the ones you don't want to use

# uninformative priors
# alpha ~ dnorm(0.0,1.0E-6)
# beta[1] ~ dnorm(0.0,1.0E-6)
# beta[2] ~ dnorm(0.0,1.0E-6)
# beta[3] ~ dnorm(0.0,1.0E-6)
```

```
# informative priors
taulat <- 1 / 0.04 / 0.04
tauelev <- 1 / 0.0003 / 0.0003
alpha ~ dnorm(0.0,1.0E-6)
beta[1] ~ dnorm(-0.1725,taulat)
beta[2] ~ dnorm(-0.0022,tauelev)
beta[3] ~ dnorm(0.0,1.0E-6)

}
```

Data

```
list(lat = c(41.97, 42.00, 42.03, 42.05, 42.05, 42.17, 42.19, 42.23, 42.27, 42.31, 42.56, 42.57,
42.58, 42.69, 43.33, 44.06, 44.29, 44.33, 44.50, 44.55, 44.76, 44.95, 41.97, 42.00, 42.03,
42.05, 42.05, 42.17, 42.19, 42.23, 42.27, 42.31, 42.56, 42.57, 42.58, 42.69, 43.33, 44.06,
44.29, 44.33, 44.50, 44.55, 44.76, 44.95 ), richness = c(6, 16, 18, 17, 9, 15, 7, 12, 14, 9, 10,
10, 4, 5, 7, 7, 4, 6, 6, 8, 6, 6, 5, 6, 14, 7, 4, 8, 2, 3, 4, 8, 8, 4, 2, 7, 2, 3, 3, 2, 3, 2, 5, 5),
elev=c(389, 8, 152, 1, 210, 78, 47, 491, 121, 95, 274, 335, 543, 323, 158, 313, 468, 362,
236, 30, 353, 133, 389, 8, 152, 1, 210, 78, 47, 491, 121, 95, 274, 335, 543, 323, 158, 313,
468, 362, 236, 30, 353, 133),
habitat=c(1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0),
N = 44)
```

Inits

```
list(alpha = 0, beta1 = -.25, beta2=0, beta3=0.5)
list(alpha=1, beta1=1, beta2=1, beta3=1)
list(alpha=0, beta1=0, beta2=0, beta3=0)
```