Additional file 2. Equations used in the quantitative meta-analysis.

Hedges' *d*:

$$d = \frac{\bar{X}_c - \bar{X}_e}{S} J$$

where $\bar{X}_c$ is the mean species richness/abundance of primary forest, $\bar{X}_e$ is mean species richness/abundance of biofuel crop plantation, *S* is the pooled standard deviation, and *J* is the correction factor for a small sample bias:

$$S = \sqrt{\frac{(N^e - 1)(s^E)^2 + (N^c - 1)(s^C)^2}{N^e + N^c - 2}}$$

and

$$J = 1 - \frac{3}{4(N^c + N^e - 2) - 1}$$

where N^c is the sample size for primary forest, N^e is sample size for biofuel crop plantation, s^C is the standard deviation for the primary forest, and s^E is the standard deviation for biofuel crop plantation.

The variance of Hedges's *d*:

$$v_d = \frac{N^c + N^e}{N^c N^e} + \frac{d^2}{2(N^c + N^e)}$$

In cases where the estimates of mean and standard deviation were not provided but a *t*-statistic was, this was used to calculate Hedges' *d* by transforming the *t*-statistic first to Hedges' *g* and the *g* then to Hedges' *d*. The equation for Hedges' *g* when the sample sizes are equal is:

$$g = \frac{2t}{\sqrt{N}}$$

where *N* is the total sample size ($N^e + N^c$).

And for Hedges' *d*:

$$d = g\left(1 - \frac{3}{4(N^c + N^e - 2) - 1}\right)$$

The *Q*-statistic:

$$Q = \sum_{i=1}^{k} W_i(Y_i - M)^2$$

where W_i is the study weight ($1/V_i$), V_i is the within-study sampling error variance, Y_i is the study effect size, M is the summary effect, and k is the number of studies.

The I^2-statistic:

$$I^2 = \frac{(Q - df)}{Q} \times 100\%$$