There once was a grid at ol' Carkeek

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October 6, 2015

Keywords

Stuff, things, neat, cool, wow, instafun, tags4likes, etc

Abstract

This is the text of the abstract.

Introduction

For centuries, humankind has wondered: If I have two apples, and someone gives me another two apples, how many apples do I have? Some people did this (**?**).

Methods

We use the general framework outlined by Shelton et al (CITE). That study outlined the structure for estimation of the proportional biomass of a taxon (B_i) given the proportional counts of sequences recovered from a parallel sequencing run (Z_i).

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We modeled the counts of DNA sequences (Z) from each of a given taxon i, in each replicate PCR j, from each replicate of a given location k (hence, Z_{ijk}), as though they are ?(proportional to/drawn from)? a Poisson distribution. Poisson distributions are described by one and only one parameter, their mean; in this case the mean is given by an exponential function e^{λ}. Thus,

$$Z_{ijk} \sim Poisson(e^{\lambda_{ijk}}) \tag{1}$$

In turn, we further assume this parameter λ is linearly proportional to a suite of taxon-, pcr-, and site- specific parameters describing the variance associated with each sub-process linking the amount of DNA (Y) of a given taxon i at a given location k in a DNA extract (hence Y_{ik}):

$$\lambda_{ijk} = \beta_0 + \beta_i + \eta_{ijk} + \epsilon_{ijk} \tag{2}$$

Where β_0 is a general intercept across all taxa, β_i is a fixed effect accounting for the variance associated with taxon i, and η_{ijk} and ϵ_{ijk} are random effects of variance resulting from the processes associated with PCR and spatial location, respectively.

Results

We found that if you have two apples, and someone gives you another two apples, you have four apples.

Discussion

Boy those results sure are neat. Now, the pressing question becomes: How do you like them apples?

Acknowledgements

We wish to thank all of the little people.

Funding

This study was funded by our super-rich uncle.

Author Contributions

Conceived and designed the experiments: . Collected the data: . Conducted the analyses: . Wrote the first draft: . Edited the manuscript: .

Data Availablity

The data and code used to generate our results can be found at the following url:

References

Figures