Zeta_r modelling

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30 June 2018

Recipe for zeta modelling

If you just want the zetas to look at the seta_r coefficient, there's nly 2 things to do.

1) the species list need to be in the form of a presence absence matrix.

- here is how I did that, but I expect there's an easier way, this is a bit long winded because I had multiple sites,missing plots and duplicate species because of saplings etc.

But bascially you just want to end up with a df with columns for each species and rows for all your quadrats and 1's and 0's.

2) Instead of calculating the zetas myself, which got a bit tedious after about zeta3 - I used Guillaume Latombe's zetadiv function : https://cran.r-project.org/web/packages/zetadiv/zetadiv.pdf

That's that for just getting empirical zetas.

If you want to carry on and do the SAC extrapolation you then :

1) Fit your model to the above empirical zetas.

2) Calcualte a set of predicted zeta_1 - zeta_n from your model. Here n is the number of plots that would fill a site. e.g if the area of my site is 4000ha, I need n = 4000/200 = 20. I need zetas to 20.

3) You then need to carry out the following series sum :

Total richness = nCr x zeta_r - but the terms alternate so, say you had 4 quadrats you would do this:

Richness = 4C1(zeta1) - 4C2(zeta2) + 4C3(zeta3) - 4C4(zeta4)

I think the venn diagrams Cang uses are the best way to see why the above is happening. Isnt it just that because each zeta is the average number in the intersection - if you multiply the zeta by the number of intersections (the nCr), you're back to the number of species. Then if you go through a small set, of three say, you can see in that venn diagrammy way, why you need to add some and subtract others in order to get the unique set of species for your site, without having double counted any.