Discuss with Chris about my manuscript

**Field distribution analysis**

CT: “This assumes equal abundances of flies at all elevations, which seems risky. Would be good to at least acknowledge the issues”

JC: I used abundance-weighted mean

CT: “As there are only two transects, fitting it as a random effect seems a really strange thing to do (and likely ‘wrong’ - you are effectively estimating the variance of a population of transects).”

JC: I will do a test with fix effect and mention the ones with significant transect\*elevation effect. If so, report coefficient of elevation separately

CT: “I trust your hIndex more”

JC: In the main text, focus on hIndex, and mention that there is a supplementary regression analysis to confirm that hIndex is an appropriate measure.

**Thermal performance curve**

JC: updated description of the multi-level structure; specify priors; [should I provide a mathematical description in supp? – take your sketch to talk with Chris]

CT: fix a and b and varying RTmin and RTmax

JC: No I won’t do that. Because a controls the peak value and b control the symmetry. I think there is good reason to believe that the shape vary between species.

**The regression analysis**

e.g. RTmax (100 draws from posterior distribution) ~ hIndex + (1|spName) + (1|gr(phylo.tree))

My questions:

1. 100 draws – legit? CT: “Not seen this approach much before - if they were nice gaussian posteriors, then it won’t add much. if they weren’t nice Gaussian’s, then you probably have bigger problems….”

CT&JC: weighted (by uncertainty) regression or just 7 points regression. Better to keep the stat simple since you have a lot to tell, and your significant result is obvious.

1. (1|spName) [also applies to fec.29C and other thermal traits] JC: I need this as the random effect, because traits like fec.29C have repeated measurement, so not having this random effect will create pseudo-replication in the regression between trait~hIndex
2. (1|gr(phylo.tree)) JC: the tree define the relatedness between species, in order to solve the potential issue that species traits are not independent.
3. Could do 7 points regression

**Short term competition**

CT: “There is a good argument that I saw in a presentation, that the N\_focal on the denominator, should actually be N\_focal-1, especially when you are dealing with very small sizes like you are here”

JC: didn’t fix

CT: “Your brackets are wrong in your equation if this text is right (or the other way around!)”

JC: and  is a constant defining the form of the density-dependence relationship. *β* represents the interspecific competition coefficient of the competitor species to the focal species, which define the equivalence between the two competing species. (Hassel and Comins 1976)

JC: unstable coexistence: the equilibrium point depends on the starting density – not necessarily coming from the typical priority effect (species A modify the environment to become unhabitable for species B) though