Hey Maia,

I have been looking through your code and I have to admit I am a little lost. Reading someone else code is a difficult thing to do in general and I probably should have gone over this with you in person, instead during my flight. I am sorry about that. Anyways, I have been reading over the appendix and from what I understand, in an individual based model, you are tracking each individual in the population. You do this with growth in App. Equation 2 with the subscript i. In App. Equation 3, there is not subscript i, you are just tracking the number of people in the population which is different than tracking each individual in the population. When it comes to survival, each year should be a Bernoulli trial where you randomly draw a value from uniform distribution between 0 and 1 for each individual. If that value is less than exp(-M) they survive and if it isn’t they die. Currently, your equation just removes a constant portion of the population. You can’t tell which individuals are alive or die. Writing an individual based model as an equation is difficult. I didn’t do it in my paper, I just described it in words. If you want to write it as an equation, one possible way is to create a binary variable called *Si,a* which represents whether individual *i* in year *y* is alive at age *a* with *Si,a* = 1 or dead with *Si,y,a* = 0. To determine the number of individuals in your population after accounting for natural mortality

where *ui* is a random value drawn from U[0,1] for each individual, *na* is the number of individuals at age *a* and *Ny,a* is the number of individuals at age *a* in year *y*.

As for Andre’s comment about maturity, I believe the same thing is going on. App equation 4 calculates the probability of being maturity at a given size. I believe an individual can either be mature or not. They can’t be 40% mature. Therefore, once you get the probability of being maturity, you need to do another Bernoulli trial to determine if a particular individual is mature or not. This way, in your individual based model, you know whether a particular individual is mature. I would double check with Andre that I got this right. It is very possible I am dead wrong and steering you in the wrong direction. If you want to talk about this in person, I will be back in the office on Monday.

Hope this helps,

Lee