Hi Colin-

Thanks for sharing this most recent version, nice to see this moving forward. I’ve structured my comments kind of like a review, with a few “major” comments about the model and the results in the first section below and then some more minor comments after that.

I also read the Intro. This seems to have a lot of the right ideas in it, although I think it’s a bit long and not yet focused tightly enough. If it were me I wouldn’t spend any more time on the Intro yet, with one exception: I think as you start to move further down the road towards a proto-manuscript, it could be useful to revisit the last paragraph of the Intro and think about the “Here we…” argument that it presents, to make sure that you’re answering the questions that you’re asking and that you’re asking the questions that are most interesting or important.

I think moving closer to a proto-manuscript is an important next step. I think the missing pieces for that are (1) an initial draft of Results text and (2) a sketch of Methods that includes your current model description plus some clear explanation of what model experiments you’re going to run and why. Adding those two bits may help you to crystallize the story.

Major comments

I continue to feel pretty strongly that there should be a -sJ term in the juvenile equations to balance the +sJ term in the adult equations. I appreciate that you ran some simulations to look at differences in outcomes with and without this term; I am surprised that it affects only the rate of approach to equilibrium, not the equilibrium itself, though perhaps I should not be. Regardless, it seems like simple logic to me that fish that mature from the juvenile pool to the adult pool can no longer be in the juvenile pool.

The only way I can make sense of having +sJ in the adult equation but no -sJ in the juvenile equation is if the model actually runs in discrete time, with the J pool reset to 0 at the beginning of each time step. Then +sJ is the proportion of the juvenile pool that matures to adults during the time step, and all of the juveniles that aren’t in sJ (and don’t die from one of the competition or predation terms) are assumed to have died from some other source of natural mortality. This is sort of what you say at the bottom of page 1 of your model summary, but it is not what the equations say – they are in continuous time, and assume that juveniles can turn into adults while also remaining juveniles.

Have you tried doing an equilibrium analysis of this model (or, if that is too ugly to manage – it may or may not be – of a similar model in which you replace the arena dynamics with simpler Lotka-Volterra style interactions?). That may be informative for you and your eventual readers.

A strong simplifying assumption in your model is that effort on a given species is static. How does this assumption influence the results?

You describe Figure 4 as evidence that the switch from Sp1 dominance to Sp2 dominance can be delayed by stocking Sp1, harvesting Sp2, or doing both. But it looks to me like in all four panels Sp1 declines to zero abundance at an identical (or nearly identical) time point, around year 220. The major difference between the scenarios seems to be how much of Sp2 you have around (and how soon) after year 220. Am I missing something?

I found it a little hard to take the meaning away from Fig. 2 and Fig. 3. I think adding Results text and an explanation of the model experiments that you’re running (as I suggested up top) will help a lot with this; it may also be useful to move the figure labelling and figure captions a little further along the road from being for your use only towards being for readers less familiar with the work.

Minor comments

The term + *m*\*A in the differential equations for the adults is described as a loss term, with *m* the rate of natural mortality. I presume that you must be using negative values of *m*, so that the math works correctly here, but nonetheless I find this a little confusing. It is more typical to show a loss term with a negative sign in front of it (so, - *m*\*A); this has the added advantage that you can use a positive number for the mortality rate *m* (it’s a little confusing to think about a negative mortality rate).

I agree with the comment that you made in your Slack message that it might be worthwhile to consider a saturating rather than linear recruitment model.

Your Slack message also mentions that you’re working on quantifying cost of stocking using data from Greg. Jake Ziegler did some similar work for the paper he has in review right now at Ecology and Society – perhaps looking at that paper can save you some work. I’ll attach it to my email along with this document…it looks like he doesn’t give a ton of detail about what he did, but in Table S1, in the row for gamma, he gives a citation for an online reference. He (or I) could probably tell you more if needed.