**Lab Meeting – Group Paper discussion**

* Simplified reality of habitat (three boxes).
* Relationship between abundance and productivity for each habitat (box)
* We generally look at how many fish are coming back to the whole region. For example, sum of all the A’s = abundances vs. the sum of all the P’s = productivity
* But does this fall apart when the habitat contracts or expands?
* If we lose a habitat, then the overall stock-recruit function is going to drop quite a bit
* There is a decreased productive capacity when you lose habitat
* There is an interesting interplay between the dispersal of these habitats and their recruitment
* Biological theory often determines the shape of the curve between abundance vs. productivity, rather than the data strictly determining the shape of that curve
* Scale mismatches are present that then misinform data management
* Management systems at one point probably did work at the local level with Indigenous groups, but they have since then banded together at work at the ocean level
* There is a similar phenomena in the sea otter. For examples, sea otters in the S. Atlantic which went down to 50 are growing in population at much faster rates than the population off the coast of California that wasn’t hit as badly.
* He thinks it is related to the specific habitat type. The S. Atlantic is more linear, but California is more 2 dimensional.
* So in relation to Salmon in the Alaska coast, there is more habitat and complexity. A dimensionality allowing for more nodes for population spread.
* These concepts are related to metapopulation theory in regards to sources and sinks
* You can look up network topology to help guide some reading/research
* Sam’s Triangle hypothesis – fish tend to move with large bodies of water, and will not leave them because it not advantageous to do so
* Density-dependent strain, if one population goes down there is less and less local recruitment
* Buffer effect – if you have a population that is source population, you will see consistency in the source population, but high variability among the marginal habitat
* **3 main topics**: How different are the productivities, how different are the dispersal patterns, and how different are the habitat arches.
* Case studies could be on the Snake River system.
* Do we want it to be salmon paper or big group paper and talk about other systems?
* Hammer out the data for the three topics, and then leave it open ended to see how it applies to **other systems including sea otters, seabirds, reef fishes, butterflies**
* There are a lot of dispersal studies for reef fish and seabirds
* Lifecycle for organisms is very important
* Talk about other sources of mortality: pollution, harvest, climate change
* Torque mortality term if it is hitting populations randomly or nonrandomly, and why certain populations or habitats are getting hit
* **Dispersal topics to hit upon: directional, density dependent, amount, cost?**
* **Conservation/management: harvest?, non-random, habitat prioritization**
* Check out Justin 2014 paper about metapopulation nodes
* **Types of response variables: aggregate productivity, coefficient of variation (time/space), space**
* Start with basic base model, then add rules – but be careful about going too far. Probably the important ones to hit on should be harvest rules, dispersal rules
* Where does this fit in to the broader paper world.
* Challenges with the paper is it is touching on so many conceptual fields – makes it hard to write, but also makes it really cool to fit so many fields. Big and scary!!!! Just be careful, doesn’t need to be too big
* Proposed paper title: **Density-dependent and space, (some other catchy ending)**
* Trying to apply this paper more towards conservation, recovery, and management
* Argument: species that are more R-selected, they often have density-dependence operating at the juvenile stage and vice versa for K-selected
* Aiming for a Bioscience paper, Frontiers, general ecology, can’t go for Tree (word limit too short)
* Bring in in Sloat, Leethan?, Tim Tieger (otter guy), another salmon guy, Justing?
* Next meeting hammer out conceptual model
* Sam offers a introduction session to get people up to speed with recruitment-curves
* Kara will set up google drive
* Next meeting have the action teams going