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HW 3

4/28/2016

BI 471

1.) Book problems
    a. 6.1= As stated, complete systems or mathematical models are impossible due to the variability found in nature. In addition, stability only shows behavior of the two species at equilibrium rather than the dynamics of two species or a community interacting. However, they are useful approaches for an understanding of communities in general because of the community matrix which utilizes stability to determine the trace or sum of the matrix. Additionally, it is useful for species that have a calculable variability to better compare the species with the equilibrium stability data to get a grasp of the community as a whole.

    b. 6.3= When boiled down, and considering each one in relation to the change in one population with respect to the other (ie how 1 changes with 2 or vice-versa) the following would result:
        i. Competition is negative (-)
        ii. Mutualism is positive (+)
        iii. In a predator-prey model the change in the predator population with regards to the prey's is positive (+) but is negative (-) when in regards to the change in the prey species with respect to the predator.

2.) In chapter 6 *aij* is referencing the partial derivative of the matrix where the i and j are the placeholders of species one and two similar to n representing a total population. Whereas in chapter 7, this is used as a secondary term to represent the effects of one species (referred to as j) to another (referred to as i). Based on this I would suggest leaving the chapter 6 definition alone as it makes more sense and because what it represents does not have as concise of a replacement. Instead they should change *aij* to be just alpha and beta or perhaps e1 and e2 where the first term would respectively stand as a symbol for the effects of species one on species two and vice-versa in regards to beta or e2.
3.) By increasing the p parameter, you are essentially increasing the New Yorker's migrating to California. The result of which would lead to an increased population in California as the q parameter stays the same, and considering this is a cycle, a large group of people would continue to migrate with a lesser amount migrating back to New York.
4.) "Pitch": https://docs.google.com/document/d/1yBjitzjNZWzS65dlwt1ou2PTqH1Eo5pAvVf8cLl-a5k/edit?usp=sharing