Scientific Paper Review
40 pts

Paper is on the class website: Thomas, C.D. et al. 2004. Extinction risk from climate change. *Nature* 427:145-148.

Type your answers to the questions below. By the way, you do not need to cite the paper in your answers—it's understood that you are using it.

1) What is the main hypothesis being tested? My view of a hypothesis is that it is a prediction coupled with a mechanism, so please include both aspects. Note that this paper does not explicitly state one, but it can be inferred, so be careful.
2) By hand or by computer, draw a graph representing a realistic, but hypothetical (i.e., you do not real data to draw it) species-area relationship. Be sure to accurately label the axes (but units not necessary) so that the relationship you draw is correct. Next, write the general species-area equation that corresponds to your graphical relationship.
3) **IN YOUR OWN WORDS**, describe, in general, how area and climate-envelope modeling are used together in this paper. This will require you to succinctly describe the several steps they use to address their hypothesis. By the way, as part of your answer do <u>not</u> report the three detailed methods described on the right column of p. 145 here (that's way too detailed for this question). Also, <u>ignore</u> dispersal for this question (it will be addressed in question 4 below). <u>Instead, capture the major steps in their analysis</u> by trying to answer the following questions:
    a. What things do they need to know to start their analysis?
    b. How do they link this knowledge to <u>climate</u>, and then to <u>climate change</u>?
    c. How do they use all of this information to predict extinction?
4) **IN YOUR OWN WORDS,** how is species dispersal incorporated in this modeling exercise? Why do you think the authors used this approach? In the future as climate continues to change, what is one thing that humans could do in the real world (as opposed to the computer-modeled one in the paper) to deal with concerns about limitations on dispersal? (By the way, I don't mean use less fossil fuels—focus on dispersal.)
5) Do you believe the authors' main conclusions? Why or why not? Base your answer on the specific merits and assumptions of the paper and not from your personal feelings about climate change.