Article Review #1
This article review will be due in class on September 8th (next Thursday). Bring your write-up to class.

Write a 1-page single spaced review on how the Horizon 2100 report considers the ecological interest that you plan to research while at UNC. For example, if you will be researching forest policy, think about how this report incorporates policy in the strategies for 'aggressive conservation.' If your interest is genetics, remote sensing, humans, education, etc... think about how the Horizon report considers these components. One of the goals of the report was to be holistic - this is an opportunity to comment on this goal.

Please cover the following in your review:
- State what the issue is that you've decided to use to criticize the Horizon report, and why you think this issue is important.
- Provide an example of where the issue is discussed, or if it is not discussed, your reason why the authors may not have considered it and what your vision might be for the year 2100.
- Discuss how the strategies are appropriate, or not appropriate, for attaining this vision.

    To write about:
Reserve selection for plant and animal communities during climate change. That would require aggressive conservation. Interests: remote sensing, human impacts, climate change.

Ecol190 Article Review #1
Dahl Winters
9/8/05

Modeling ecological processes for conservation purposes is a formidable task, given that we're striving to model in our brief lifetimes what took 4.6 billion years to evolve. However, given that our lifetimes have been long enough to destroy much of the same system, perhaps we can also find the time to understand it and to try to conserve it. This is what the authors of Horizon 2100 advocate that we do, to restore and manage ecosystems so we can use and enjoy them without reducing the quality of the vital services they offer. Modeling what to do to achieve this will be difficult due to global climate change.

We can't model how climate will affect all the inter- and intra-species interactions within communities. We can't model what the effects of increasing cloud cover will be on precipitation, which is crucial since a slight rise or fall can affect all the ecosystem processes that hinge upon it, such as plant productivity (and consequently CO_2 balance), and the detoxification of contaminants in runoff. There are so many uncertainties involved in predicting the future. Problematically, governments and economists don't like to deal with uncertainties because the people they must answer to also hate uncertainties. Therefore, most people like to avoid addressing ecological problems whenever possible.

I think the best way to respond to the uncertainties of global change is to boost the resilience of an ecosystem to change. This is in line with Strategy 4 of Horizon 2100, and also with my graduate research. I hope to model how current habitat reserves can be connected so that plant communities can successfully migrate and continue to perform vital ecosystem functions in their new locations. By improving landscape connectivity, it wouldn't matter whether areas get warmer or cooler, or wetter or drier. Connecting habitat reserves would enable communities to migrate to more hospitable locations. Overlaying a map of current habitats and possible future habitats (considering all the uncertainties in climate and precipitation) would allow identification of areas that need protection, which would be the areas that overlap between the two maps.

Though the actual makeup of communities and their geographic ranges will likely change, we still need to preserve ecosystem functions within an area. By modeling how different members of a plant community are likely to migrate, we can determine how much of the plant community will be recreated in a new area, and thus estimate the percentage of ecosystem functions that will still be retained. In some cases, if the climate is changing too quickly for species migration, human intervention would be required to transplant them to ensure the formation of intact, functional communities. It will likely be time-consuming, but it's a necessary part of managing ecosystems to mitigate the negative effects of climate change.

The authors of Horizon 2100 have tried to give us a vision of a better future for both humans and our environment. It is a vision I would like to embrace through my research, but sadly, most people in the world will be unable to see or strive toward this vision. These are the citizens of rapidly growing countries who have little access to education, and thus will likely never read or hear of Horizon 2100. To ensure cheap resources and labor for the benefit of America and other developed nations, these people are forced to destroy the environment to earn their living. The vision of Horizon 2100 will never be reached unless people can stop trading their natural resources to ensure their survival. Honestly, who will save the forests and waters for the future of their children if it means they can't earn money to ensure their survival today? Education is also paramount. We ecologists can hawk all day about global warming and ecological devastation, but there will be little change until a better infrastructure exists to provide education to everyone. The difficulty is exacerbated by cultures that refuse to have certain kinds of education provided to part or all of their people. However, we must still try to address (and fix!) the social and economic problems that are keeping people from embracing Horizon 2100. All complaints over how much it will cost in time, money, and resources need to be laid aside. If we want to stay alive on our island Earth and we've mindlessly fouled the only land and water that can sustain us, then frankly we need to start cleaning it up regardless of how much it will cost or how long it will take.