

Climate Change PBL #2: Biodiversity in BC

Problem

The biodiversity of British Columbia (and the entire Pacific Northwest) is under threat from changing temperature patterns due to climate change. How can the impacts of climate change on BC's forests and ecosystems be mitigated?

Background

BC is the most bio-diverse province in Canada, due in part to the range of climates in the province.¹ This biodiversity has already been impacted by climate change and more changes can be expected in the future. As a result of warmer winters, British Columbia is experiencing the largest insect infestation in North America. Mountain pine beetles have infested an area about the size of the United Kingdom. Such conditions weaken pine trees and make them more conducive to forest fires. Compounded with this is the fact that the forest fire season is expanding at a rate of one day per year because of warmer summers. As a result of warmer water, the Fraser River sockeye salmon run is under threat.¹ A study published in the *International Journal of Plant Sciences* predicts that the Pacific Northwest may lose 47% of its plant species, which will be replaced by non-native species, as result of climate change.² Sea creatures, such as the Humboldt squid, Hake, and the Hawaiian moonfish, which are not native to B.C. have been spotted frequently in recent years. What can be done to respond to these changes in local biodiversity?

Guiding Questions

1. Consider focusing on a particular region (ex. Coast Forest Region), place (ex. Pacific Spirit National Park), problem (ex. pine beetle infestation), type of plant (ex. Cedar tree), or animal (ex. Salmon).
2. Can natural pathways be created to enable species to move northwards to conditions more appropriate for their survival?
3. What species will replace those that can no longer survive under current conditions? To what extent, if at all, should the Provincial government or other agencies be involved in an effort to manage this change?
4. Which industries will be impacted by these changes and how can these industries be involved in the mitigation process?
5. What other relevant organizations are there, aside from the government and industries? What role can these organizations play in the mitigation process?

¹ See the website of Biodiversity BC at: <http://www.biodiversitybc.org/EN/main/findings/4575.html>.

¹ Larry Pynn, "High Fraser River temperatures may be harmful to salmon," *The Vancouver Sun* (6 August 2009). <http://www.vancouversun.com/High+Fraser+River+temperatures+harmful+salmon/1865282/story.html>

² Gerald E. Rehfeldt, "Empirical Analyses of Plant Climate Relationships for the Western United States," *International Journal of Plant Sciences*. Vol. 167, No. 6 (November 2006), p. 1123-1150.

Resources (Do NOT directly contact individuals in these organizations).

1. The David Suzuki foundation provides a breakdown of the environmental impact of climate change, with a section specifically on BC that includes a series of links relevant to this PBL: http://www.davidsuzuki.org/Climate_Change/Impacts/
<http://www.davidsuzuki.org/publications/downloads/2010/On-the-Edge-Sept-2010.pdf>
2. The website of the BC Ministry of Forests and Range provides a variety of information on BC's forests and the impact of climate change:
<http://www.for.gov.bc.ca/hre/topics/climate.htm>
3. The website of the BC Ministry of the Environment provides information on how BC will be impacted by climate change, as well as specific solutions:
<http://www.gov.bc.ca/env/>
4. BC Ministry of Forests provides information on the different types of forests present in BC and how BC's forests are being managed by the industry and government: <http://www.for.gov.bc.ca/hfp/publications/00030/monocult.pdf>
5. BC Ministry of Forests provides resources regarding the effect climate change has had on BC forests.
http://www.for.gov.bc.ca/hre/topics/climate.htm#Forest_Science_Program_Climate_Change_Research
6. BC Journal of Ecosystems and Management. Impacts of Climate Change on British Columbia's Biodiversity.
http://forrex.org/sites/default/files/publications/jem_archive/ISS48/vol9_no2_art4.pdf

Potential Community Partners

1. There is potential for community engagement with many of the organizations presented in the resources section above. UBC also has a range of institutes and programs you might want to engage with depending on the ecosystem or problem you choose to focus on.
2. Forestry Innovation Investment Ltd's, an industry group, is mandated to "to support an environmentally prosperous and sustainable forest economy in BC." Its programs include initiatives that help mitigate the impact of climate change on BC's forests, namely the mountain pine beetle infestation: <http://www.bcfii.ca/>