Logan Bartholomew
Portfolio
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1. The Cathedral of Santa Maria del Fiore

A photo taken during a trip to Florence, Italy.

Media: Camera - Sony a5000 | Software: Enlight
2. Cabin Design

The task for this project was to design a summer house in SketchUp that played with verticality while still maintaining daily function. The height of this cabin allows for an unobstructed view of the lake without the need to remove trees.

The design for this cabin takes heavy influence from the Fire Watchtowers throughout Canada. With a small physical footprint this building does little to impact the surrounding environment. An open bottom floor is protected by the floor above it and is intended to be the space where the majority of time is spent for relaxation. The top floor has a large balcony for enjoying the view of the lake and an open floor plan inside the structure to promote family interactions.
My trip to Seattle was probably one of the most influential trips I have taken, not because I found it the most culturally enriching or the most grandeur but because it was one of the few cities I’ve traveled to where it felt like it was truly designed for humans. During my time in the Downtown area I realized that, unlike many downtown’s in North America, it played to it’s strengths and did not fall into the problem of trying to recreate a suburban scenario. Instead, the Downtown and surrounding area leaned on the area’s interconnectedness as well as it’s potential for high-density and mixed uses. In addition to this, the city did not try to hide it’s industry but instead celebrated it and left it in plain view, the public buildings were architecturally beautiful yet also simple and functional, and there was an obvious effort at place making with calling out culturally significant areas like the Pike Place Market.
In 2018 I began the hobby of knife making and the knife depicted on this page is my most recent creation.

The hobby of knife making has challenged me in more ways than I could have expected. Not only does one have to work with many different kinds of metal but different woods and their various properties also need to be considered. Tiny subtleties in the curves and lines must be taken into account to ensure comfortability in the hand while also maintaining the proper balance point of the blade.

Practicing the art of knife making has given me an increased attention for detail and has taught me that functional objects can also be beautiful.

**Medium:** 1095 Steel, Brass (Bolster & Pins), Wenge
5. Plane Crash

The Solheimasandur Plane crash is located on The west Coast of Iceland as a result of an accident during WWII.
6. Website

This website was designed to organize online video game tournaments where participants would be able to purchase an entry fee and then participate in said tournaments for prize money.

The main pages of this website included information on the specific tournaments, rules, tournament brackets, how the tournaments worked, and a contact page.
Energy

During my Glaciology class I was tasked with designing an academic poster on some topic related to glaciers. For my project I decided to analyze the impacts that glacial retreat can have on Hydroelectric production. This topic especially interested me because a large portion of our energy generation in Canada comes from hydroelectric means. Although, many people do not take into account what might happen to our energy mix if we were to lose our glaciers and the precious meltwater that they produce. This is important knowledge for ensuring that we are able to meet the energy needs of the future.

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Implications of Glacier Retreat on Hydroelectric Production in Bridge River

Since 1991 Bridge Glacier has seen a rapid retreat and if the models are correct it doesn’t appear this retreat will be slowing anytime soon (figure 3). This retreat poses a problem for the Bridge River Hydroelectric Complex, just downstream, that is responsible for producing between 6% and 8% of British Columbia’s electricity. As the glacier continues to retreat and the local climate begins to warm, BC Hydro will be required to deal with the challenges that come along with a changing melt regime and earlier spring. This poster will go into the implications that these changes have had, and will have, on the discharge of Bridge River and thus the energy production at the Hydroelectric Complex.

Introduction

Current Bridge River Ablation Trends

Bridge River is considered a Southern Coastal glacier (figure 1) in which the area is expected to lose between about 65-80% of the total ice surface area and volume (figure 2). While many of the glaciers in this area have recently begun shrinking at an accelerated rate, Bridge Glacier is far ahead of models predictions. This unexpected retreat is thought to be primarily due to increased calving as the glacier has retreated over the deepest part of Bridge Lake as a result of climate change. This increase in calving is responsible for a 40% increase in discharge during the winter months. As the glacier retreats further and becomes land-terminating this will decrease winter calving and thus winter discharge of the river. It was found that winter runoff, while largely increased, is still extremely small when compared to summer runoff. Moyer et al. hypothesized that the Bridge Glacier’s retreat was actually already causing a decrease in summer discharge. Once they accounted for inter-annual climatic change and increased precipitation in the area since 1886, it was found that overall discharge in the melt season had decreased by about 40% - August saw the river discharge decrease by 9% and September saw a decrease of 10%.

Melting Glaciers & Hydropower

BC Hydro is already experiencing problems on Vancouver Island as glaciers are retreating. More precipitation is falling as rain, and current storage isn’t large enough to hold what was once stored as snow and ice which is now coming more over winter, a problem Bridge River will no doubt face.

Literature Findings

University of Lethbridge

Logan Bartholow

Implications For Bridge River

From the literature and observations, it is obvious that Bridge Glacier has been shrinking significantly since the late 1980’s; however, it is much less obvious how this shrinking has been affecting water discharge from the glacier and it is currently being masked by increased temperatures and increased precipitation. However, once these factors have been accounted for there has been a reduction in streamflow by about 40% during the melt season.

Europe has also experienced this problem and models predict that most of Europe will see a decrease in hydropower potential of up to 25% and more. Western Canada, and Bridge Glacier, will also see similar trends as the current infrastructure is unable to handle the change in meltwater regime and as more and more overflow begins to occur.

Conclusion

It is important for us to understand how glacier retreat is affecting river discharge. More specifically, how the retreat of Bridge Glacier is affecting the flow of Bridge River and the energy production at the Bridge River Hydroelectric Complex operated by BC Hydro. This complex is responsible for 6.8% of the province’s entire electricity production and as meltwater, the melting season length, and precipitation increases, the Bridge River Hydroelectric Complex will see a decrease in production as the glacier retreats and river discharge changes.

Decreased water storage also poses a problem for nuclear generation (cooling) which requires much more research.

References


Swiss Case Study

Electricity production potential in the Swiss Alps is closely studied to determine the locations of future dam and reservoir projects. Using various models, they found that as the glacier retreated the total river discharge would decrease as glacial stock decreased (figure 8), production cost of the facility would increase (figure 9), and the peak discharge would occur almost one month sooner in the year (figure 7) by 2099.
8. Donut

A 3-D modeling project designed during an online class taught by Andrew Price.
9. 6th Street

This 1:1 model of downtown Lethbridge was created to help me analyze the 6th street area for my Intro to Planning project which aimed at turning the area into a Pedestrian-Only zone. To build this model an aerial reference was used from Google Earth as well as ground level photos.

Media: Sketchup
Thank You