

Climate Change and Anthropogenic Impacts on Greenland Sharks (*Somniosus microcephalus*)

Research Process

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For my research paper, I spent hours reading through scientific articles covering topics from Greenland sharks and Arctic ecological functions to sea birds, polar bears, commercial shipping, and chemical pollutants. Throughout this process, I relied heavily on the resources provided to me by the UW library system. Before I began writing this paper I was concerned with the availability of research on Greenland sharks, as it is a fairly niche subject in the scientific community. These sharks are notoriously difficult to study, and so the information we have on them is very limited. As my first step, I created an outline to narrow down all the ideas I had in my head for what exactly I wanted to write. That way, I had a starting point for my research topics.

My search process began by using the UW library website to locate a database that could provide scientific, primarily biological, peer reviewed papers. I was directed to Web of Science, a database focusing on peer-reviewed scientific papers and articles. After accessing the site, I began with a general search for “Greenland sharks”, just to see what was out there. I was pleasantly surprised at the abundance of scholarly articles on Greenland sharks, and my initial worries were subdued. This website allowed me to input specific terms to narrow down my search, such as “Greenland shark diet”, “Arctic acceleration”, or “Arctic noise pollution”. I was even able to easily locate papers that I had read in previous courses by searching for the author and the subject of the paper. During the process of writing my paper, I found that I continually needed to dig deeper into certain subjects. I began researching other topics that were indirectly related to Greenland sharks, such as the broader impacts of climate change in the Arctic, commercial shipping routes, and marine chemical contaminants, in order to come to the conclusions I wrote about in my paper. I pulled information from a wide range of subjects so that I could cross reference and ensure that none of the claims I made were inaccurate. In doing this, I was able to portray the broad scope of environmental threats that the Arctic, and its marine inhabitants, are currently facing and how the issues may change in the future.

While the Web of Science was able to provide me with an abundance of relevant information, I was faced with yet another hurdle: paywalls. Many scientific journals lock their publications behind paywalls, making articles and information inaccessible to the public. However, I was able to use our library website to access the articles for free. Most articles that came up in the search results on Web of Science were listed with a UW access button. If the access button was not available, I was able to search for the article title and author on the library website where I was provided with both physical and digital

locations where I could access that exact article. There wasn't a single paper I wasn't able to access thanks to the UW library.

With over 50 articles I had downloaded in preparation for my research paper, I needed a way to keep track of my information. I had been informed of citation managers in class by my TA, Jenny. Luckily, the UW library website has an informative section on citation managers. I looked over my options and chose Zotero because it offered an extension for Google Docs, which made adding in-text citations to my paper incredibly easy. I was able to select the type of citation I needed, which was the style of Polar Biology as it was required for my Arctic Ecology class. With Zotero, I was able to highlight and leave comments on each article so that I could come back to them later and remember the important information without having to reread the entire article. Additionally, Zotero offers a bibliography feature that auto-generates a works cited section based on the texts cited in the document. This was great for me, as I ended up not using every article I had downloaded and did not have to track which articles were used and which were not.

I consider this research paper to be one of my major accomplishments during my academic journey at the University of Washington. The amount of time and effort I have put into synthesizing all the information I gathered has been much higher than any other project I have worked on for any other class. I truly found a passion in writing this paper, and I feel inspired to pursue a career in marine research. My love for marine life of all kinds has been reaffirmed in this project, and I am confident that choosing to major in marine biology has been the right decision for me. I am extremely grateful for the opportunities presented to me by the University of Washington, allowing me to grow and thrive as a young scientist.