

The Nisqually Wildlife Refuge
Christina Kullberg
The Evergreen State College

Executive Summary

This report is about the ins and outs of the Nisqually Wildlife Refuge located in Nisqually Washington. This land holds many attributes that make it worlds different than any other ecosystem. The Nisqually area is home to a estuary. In particular this wetland is unique because it can hold both fresh and salt water. Also the wetlands are home to unique soil and plants that both have a high tolerance for water. The benefits to possessing the characteristic of extreme water tolerance, both the soil and the plants are able to filter runoff of the impurities it carries, keeping our surface and ground water sources safe. The refuge is an important geological attribute to the Puget Sound, and without it there would be devastating consequences. Through out history, the residents of Washington have had an immense impact on the wetlands. Humans imposed land conversion projects, extreme resource extraction, different kinds of infrastructures and other disturbances. Dams and clear cutting have had an extreme affect on salmon, the iconic and abundant fish of Washington. After the construction of dams and the destruction of forest, the salmon that use Nisqually as their nurseries and feeding grounds suffered to the point of near extinction and extinction itself. Nisqually and its excess water creates an environment that allow juvenile fish the opportunity to grow big and strong before continuing the rest of their life in the sound. By encouraging the fish population, the wetlands contribute to the success of our recreational and commercial fishing. To make sure that laws and regulation are being followed, someone needs to be overseeing protected areas such as the Nisqually Wildlife Refuge. In this case, that someone is the U.S Fish and Wildlife, and more specifically, the Washington Department of Fish and Wildlife. The commission of the Washington Department of Fish and Wildlife create and manage anything

and everything having to do with the fish and wildlife of Washington and their habitats. They make sure the environmental laws and policies are being obeyed, followed and implemented correctly. Environmental laws and policies have fought their way into our regulatory system and have proven to be a step in the right direction for environmental justice. Mentioning policies such as the Endangered Species Act and just basic fishing and boating licenses is just scraping the surface of the different kinds of protection we have provided for areas such as the Nisqually estuary and it's refuge.

Introduction

The Nisqually Wildlife Refuge is only one of many other geological wonders that have been mistaken for an eye sore. It is important to learn about each and every ecosystem on our planet so that we are able to stop ourselves from interfering with its fragile way of life. The wetlands provide many beneficial process and properties that it is no wonder why the Nisqually Wildlife Refuge was set aside for protection. What do wetlands provide, and how are they protected?

Background

The Nisqually Wildlife Refuge is located in Nisqually, Washington right off of exit 114. The land was set aside as protected in 1974 and ever since they have been working to protect but also to restore the area. In 2009 the refuge was restored by removing invasive infrastructures like dikes that separated 762 acres of land from the Puget Sound. Upon entering the Estuary, the land provides a learning and visitors center for public use. The entire location, not including the buildings for the public is open from sun up to sun down. From there the refuge provides 4 miles of gorgeous hiking trails that are compatible for all ages. Among

these trails there is a boardwalk trail that is perfect for viewing how the water and land species interact and co-mingle within this special environment. This wildlife refuge not only provides us with recreational opportunities but also provides a unique and delicate home for its abundant wildlife as well. At the Nisqually Wildlife Refuge, you will see, depending on the tide and time of year of course, creatures ranging from songbirds and ducks, to salmon and harbor seals (U.S Fish and Wildlife Services 2013). Further more, the refuge offers recreational opportunities such as waterfowl hunting, boating, and nature photography. But something to keep in mind is that these activities are closely monitored and are allowed during certain parts of the year under certain conditions, mainly fishing and boating, nature photography is allowed all year round during hours of operations.

Main Sections

What Are Wetlands?

Wetlands are seen by some to be one of the most undesirable landscape characteristics of our earth, and may not look like much, but are actually a unique and powerful ecosystem. In areas such as the Nisqually watershed, water covers land and plant life for most of the year. The Nisqually estuary is extra special though, because here is where fresh water from streams and rivers meet salt water from the Puget Sound. With salt and fresh water combining, it creates a body of water with variations in its salinity levels (EPA 2015). Soil that is covered by water for most of the year is call hydric soil. These conditions of Nisqually makes tolerance for extreme water saturation of soil a necessary attribute to survive. This is why the area is conducive to an abundance of unique wildlife. Majority of the plant life here has adapted to the changing water and salt levels, but also constant conditions of the water of this area, these

special plants are called hydrophilic plants (Microbial Life Educational Resource 2015). Because of this unique set up, this wetland is home to many fish and wildlife ranging from migratory birds to fish and rodents. Winter is described to be the time of year that the most wildlife flourish and are present.

What Are the Benefits of these Wetlands?

Originally, in earlier years people did not understand the value of watersheds and so instead of conserving the land, people began to develop and/or destroy them. People would do such things as dam up the areas or turn them into pastures or croplands disturbing and interfering with a large quantity of life. One of the most beneficial and critical roles watersheds play in our environment is how it filters and distributes water. What is a main contributor to pollution and the defecation of our different water sources is called runoff. Runoff is the process of water such as rain and storm water the runs along the surface of our land. While this water travels on the surface, especially in urban, industrial and commercial areas, it picks up pollutants such as chemicals, metals and other toxins. In other areas that are less developed like for example a clear cutting a forest near a stream gives runoff the opportunity to pick up sediment that can also have negative affect on our water sources. Wetlands actually combat our runoff problem by processing, purifying and recharging ground and surface water. This is possible because of the abundant plant life sucks up impurities into their roots so that by the time this runoff reaches a body of water, it has been purged of the harmful substances into something less harmful. The soil can also retain the impurities of entering water because once absorbed, bacteria and other microorganisms can often break down the undesirable substances, ending up with the same results. Another important role this land plays is how it

allows the overflow of water from both the Puget Sound and the Nisqually River to have somewhere to go where it is not destructive. This is important because the wetland absorbs extra water from storms so that it does not find its way into our developed areas creating a high possibility of destruction to our communities. The estuary deals with this flooding of water in two ways and that is pooling on the surface and soil absorption. Once the area has received this excess water, it then slowly drains back into the water system, and this characteristic makes it possible for us to properly prepare. We have come a long way in regards to our treatment of wetlands, and have discovered how wetlands cannot only provide for us, but also protect us.

Watersheds such as the Nisqually are important areas for fish populations to start their lives. Fish such as salmon use the Nisqually wetlands as nurseries and feeding grounds. Without these lands there would be an extreme decline in our fish population that is a key factor when assessing the health of any ecosystem. Salmon need the five H's to survive, harvest, hydropower, habitat, hatcheries and history (Montgomery 2003). Habitat and history are important because a salmon is critically affected by any habitat change, and also paying attention to our history contributes immensely to a positive future for both us and other species such as the salmon. An example of both actually happened in our past during the early 1900's, this is when humans had a huge impact on the salmon population, to a point where we almost or did destroy them. First clear-cutting the forests of the Nisqually watershed made the land susceptible to flash floods that would fill the spawning grounds with silt, making them impossible to navigate or conducive for feeding. Also, dikes were constructed blocking the marshlands and estuaries around the Puget Sound, in addition to being filled and dredged.

Then, dams were built on the Nisqually River making it difficult for salmon to travel up or down these waterways. A majority of the time, turbines of these man-made infrastructures would tear up these poor fish. For instance, the Alder Dam interfered with the water flow to the point where the spawning areas of the spring Chinook that they became extinct, in addition the fall Chinook experienced an intense decline. Since these negative events, we have begun to heal the affected areas that otherwise would have been stripped of its natural qualities. Beginning in the mid-to-late 1900's we started to tweak the use of our dams to make them conducive to salmon life. We added fish screens, and water to areas needing it most. The forest was also tended to, loggers were required to leave standing trees along waterlines to help discourage erosion and keep the temperature of the water cool. By knowing and learning from our past, we can protect the remaining salmon and also protect our recreational and commercial fishing industry that our state heavily relies on. Without the abundance of salmon and other fish that use areas like the Nisqually watershed we could experience a big hit to our economy and suffer the consequences. Humans can have an extensive impact on the environment around us, but with proper knowledge we can lessen our impact and save species that are not only important to us, but to their fellow co-inhabitants. The Nisqually wetlands are home to an abundance of fish that without this ecosystem could otherwise suffer, and thus so would our economy. Conserving these lands not only benefit the organisms that live here, but also have a direct positive effect on humans as well.

Who conserves and protects the Nisqually Wetlands?

The U.S Fish and Wildlife Services oversees the Nisqually Wetlands and works along side the Washington Department of Fish and Wildlife Services to protect the Nisqually estuary. The

department's headquarters is located in Olympia, and has six other offices throughout the state. A tight relationship is held between the state's governor and the Washington Department of Fish and Wildlife Services' commission. The governor's role is appointing each member of the commission, in addition to the senate approval, who then holds their position for six years. The members of the council are from different places around our state. When choosing the commission the governor needs to keep in mind that: no two may reside in the same county, three must be from east of the Cascade Mountains, while three must be from the west. During their time of service, the members oversee and establish the policies used to protect the fish and wildlife of Washington State. They also decide all of the factors that go into harvesting and the recreational use of species and habitats.

The Nisqually Indian Tribe has a profound history with the Nisqually Basin and have too been involved with the protection of the Nisqually area. Starting from the past, the tribe's ancestors migrated from the Great Basin to where they are located present day, Nisqually. This Indian tribe specifically is known as fishing people, and salmon have a strong presence in their history. So they seem their main role as stewards of the salmon population. To help and conserve the salmon, the tribe owns their own fisheries, and they are Clear Creek and Kalama Creek (Nisqually Indian Tribe 2016). The Nisqually estuary is of their utmost concern and they participate in projects such as the Nisqually Delta Restoration Project. This project involving the tribe and other partners have stayed true to their commitment of restoration and has made the Nisqually Basin, including the Nisqually National Wildlife Refuge, a better place for both the use of human and our fellow non-human neighbors.

As the environment becomes an increasing priority, the government and the public both see an importance to implementing laws and policies. Implementing laws and policies for the environment give projects like the Nisqually Wildlife Refuge the legal protection it needs to sustain the positive progress it has made from past events mentioned earlier. A specific act that was implemented to conserve areas such as the Nisqually wetlands is the National Wildlife Refuge System Improvement Act. This act was vital to the existence of the estuary because, as you can tell from the name of this policy, it was created to improve natural areas devastated by human interaction. Projects like the Nisqually Restoration Projects are possible because of policies such as the National Wildlife Refuge System Improvement Act. This project is conducted by many parties such as: USGS, the Nisqually Indian Tribe, Ducks Unlimited, the U.S. Fish and Wildlife Services, and the National Wildlife Refuge System. The product of all of these partners' efforts has doubled the marshland habitat of the Nisqually Basin, an astounding improvement. In addition, other laws that are vital to the success of the refuge are laws involving recreational activities such as hunting. To hunt waterfowl, the U.S Fish and Wildlife has set rules of what time of year, where, how, and what kind of waterfowl someone is able to hunt. Without regulations such as mentioned in the latter, there would be no protection of this entire newly restored estuary. Rules and regulations not only keep patrons in line, but also provide them with knowledge of how we can still utilize the environment without using it to where it would be unsustainable. The point of the estuary is not only to be a place free of destruction, but also a place of a learning opportunity. Working out ways recreational activities can be allowed on such land exposes humans to nature in a positive and beneficial way.

Conclusion

In closing, wetlands in general are a landscape characteristic that, if present is of something to be valued. More specifically, the Nisqually Wildlife Refuge is a critical part of life in and around the Puget Sound, and without its presence; we would have a less diverse community of organisms. Luckily enough we halted our destruction of this precious resource and have implemented laws for its protection. My recommendation for the next step in the story of this wetland and others is to spread the word. Talking and educating others of the value that wetlands, marshes, swamps and other water flooded areas hold will prove to be key in protecting and saving these key ecosystems.

Photo Essay



This is the boardwalk trail that leads out to a beautiful view of the Puget Sound.

Kullberg, Christina. (2015). *Water Bridge*.



Here we have an area of land that is usually covered with water, but the time was continuing to come in at this time.

Kullberg, Christina. (2015). *Mud*.



This gull is one of many other types that inhabit the estuary and are quite friendly.

Kullberg, Christina. (2015). *Gull*.

References

- Graff, L., Middleton, J. (2001). *Wetlands and Fish: Catch the Link*. Retrieved from <http://www.habitat.noaa.gov/pdf/fishandwetlands.pdf>
- Microbial Life Educational Resources. (2015). *Wetland Habitat Tour*. Retrieved from <http://w3.marietta.edu/~biol/biomes/wetlands.htm>
- Montgomery, D. (2003). *King of Fish: The Thousand-Year Run of Salmon*. Retrieved from <https://www.scribd.com/book/229201082/King-of-Fish-The-Thousand-Year-Run-of-Salmon>
- Nisqually Indian Tribe. (2016). *Culture*. Retrieved from <http://www.nisqually-nsn.gov/index.php/heritage/>
- Thurston Conservation District. *Wetlands in Thurston County*. Retrieved from <http://www.thurstoncd.com/sites/default/files/u9/Wetlands%20in%20Thurston%20County.pdf>
- United States Environmental Protection Agency. (2015 November 15). *What is a Wetland?*. Retrieved from <http://www.epa.gov/wetlands/what-wetland>
- U.S. Fish and Wildlife Services. (2013 June 23). *Conservation*. Retrieved from http://www.fws.gov/refuge/Billy_Frank_Jr_Nisqually/what_we_do/conservation.html
- U.S. Fish and Wildlife Services. (2013 June 23). *Wildlife and Habitat*. Retrieved from http://www.fws.gov/refuge/Billy_Frank_Jr_Nisqually/wildlife_and_habitat/index.html
- Votteler H. T., Muir A. Thomas. (2002 January 29). *Wetland Protection Legislation*. Retrieved from <https://water.usgs.gov/nwsum/WSP2425/legislation.html>