A Land of Change: The Evolving Landscape and Environmental History of Washington State

Environmental history is an interdisciplinary field that investigates the complex relationships between humans and their environments and aims to explain how societies have perceived, shaped, and been shaped by the natural world over time. Central to the environmental history of Washington state is its characteristic geology, formed by powerful tectonic forces, glaciers, and volcanic activity. Situated at the heart of the Pacific Northwest coastline and deeply influenced by its geologic past, Washington's varied climates have fostered an exceptionally diverse array of flora and fauna. At the intersection of these dynamic ecological forces lies an environment rich in natural resources and striking landscapes, which have both sustained and been revered by humans for untold millennia. However, as Euro-Americans explored and settled the region, they imposed a vastly different ethos of human-environment interaction, greatly disrupting the ecosystem and the demonstrably sustainable relationship the Indigenous people had with it. By examining the environmental history of human habitation in Washington, we can better appreciate the resilience of both the region's ecosystems and its Indigenous peoples, as well as recognize the vital role of Indigenous knowledge and adaptations in responding to the environmental consequences of colonization and building a more sustainable future.

Geology – The Foundation of Washington's Environment

At the core of Washington's natural environment is its geology. Much of the state's geology can be attributed to tectonic activity, catalyzed by the eastward movement of the oceanic Juan de Fuca plate, where it converges with the continental North American plate. The oceanic lithosphere—the portion of the Earth's crust comprising oceanic plates—has a higher density, and thus, less buoyancy than the continental lithosphere. Consequently, when the higher-density

Juan de Fuca plate converges with the lower-density North American plate, it is pushed beneath the more buoyant plate where it slides into the Earth's mantle in a process called subduction (Johnson et al. ch. 2). Temperature and pressure within the Earth increases at depth, but the pressure of the Earth's mantle is sufficiently high to prevent it from melting into a liquid state from the high temperatures. While the mantle is typically in a solid state, the subducting oceanic slab releases volatile materials into the asthenosphere (the upper mantle), lowering the melting point to generate magma in the mantle wedge—the triangular region between the subducting slab and the overlying lithosphere. Liquid magma is more buoyant than the continental crust above it, causing it to rise to the Earth's surface and form volcanoes (Matthews 510). This volcanic activity defines the Cascadia subduction zone, marked today by the iconic stratovolcanoes of the Cascade Range that spans the entire state of Washington, geologically dividing Western and Eastern Washington. This division establishes the broadest distinction which can be made in categorizing the diverse geography of the state.

The Olympic Mountains of Western Washington seemingly contradict the tectonic convergence model of the state's geography due to their significant distance west of the Cascadia subduction zone and the absence of volcanic activity today. However, the existence of this peculiarity is rooted in the subduction of the Juan de Fuca plate. Created millions of years ago deep below the ocean's surface, the Olympics have been "uplifted, bent, folded and eroded into the rugged peaks you see today" (*Geology of Olympic*) by the subducting plate. One might expect erosion to level out the mountains, creating smooth, sloping curves and lower elevations; however, erosion paradoxically contributes to uplifting the Olympics and sculpting its peaks through the process of isostasy. Isostasy describes the equilibrium between the lithosphere and the mantle, where an increase or decrease in lithospheric mass at any particular point will result in rising or sinking, respectively. Erosion of the Olympics has left its highest peaks mostly untouched; the alpine glaciers of the most recent ice age carved "deep U-shaped valleys fairly close together without much reducing the highest ridges. They have removed significant mass from the range as a whole, so it floats higher isostatically" (Matthews 511). Similarly, the Puget Sound basin, one of the most iconic and pivotal features in Western Washington's natural and environmental history, was carved out by multiple periods of glaciation, and connected inner regions to the ocean (Goble, et al. 55, 61).

Lying on the other side of the geographic divide, Eastern Washington has its own remarkable and unique geologic past. Evidence of ancient volcanism can be found throughout much of this portion of the state. Long ago, a hotspot—volcanic activity which occurs within a tectonic plate, rather than at plate boundaries—opened fissures in the land and released floods of basalt lava that are observed today in the vast flood basalts of Eastern Washington. This hotspot is unrelated to the subduction zone, but USGS geologists believe it is directly linked to the Yellowstone hotspot of today (Yellowstone Volcano Observatory). Not unlike the dramatic impact glaciation had in the west, Eastern Washington was likewise affected by glacial advances, but with a noteworthy difference: the Missoula Floods. The ice dams and lakes, which existed at the end of the last ice age near the present day Montana town, released a deluge of water across Eastern Washington each time its dams were breached, carving "coulees, potholes, channeled scablands, and other features of the landscape" (Goble, et al. 4). Finally, the prominent Columbia River at the core of Eastern Washington's geography has sustained human habitation of the region, and provides a large source of water to irrigate the fertile farmlands of the region today.

The unusual and diverse geology of Washington state is at the core of the physical foundation for the ecological systems that developed from it. Ongoing geologic processes will

continue to shape the land through events like mudslides, earthquakes, and volcanoes (Matthews 510-513, 516). Coupled with the climatic conditions generated by geographic location and the topography of the land, a complex assortment of disparate biomes and ecological conditions have developed in a remarkably compact region, each characterized by its own wealth of resources. This natural history and the ongoing natural processes provide the setting for which to examine the human relationship with the environment of Washington state.

The Traditional Practices of Washington's Indigenous Peoples

Humans have lived and thrived in this region for countless millennia and the natural environment has had a marked effect on human activity (Goble, et al. 3). Indigenous have lived in this region since time immemorial, resulting in a deep, intimate relationship with the natural environment. The Squaxin Island Tribe tell the Salish Legend of *The Star Child*which describes the development of their ways of life and extensive knowledge of herbs, plants, fish, and tools (*Squaxin Island Oral Histories and Salish Legends*). A similar ancient connection and knowledge of the land is found in the Nisqually Tribe's oral history. In an interview with the late Bill Frank Sr., father of the renowned activist Billy Frank Jr. and elder of the Nisqually Tribe, he shares the history and Indigenous understanding of the Lushootseed¹ name *taq*^wu?ma?², better recognized by non-Natives as "Tacoma" or "Mount Rainier", meaning "Don't Forget the Water" (Frank, William, Sr.). This description of the mountain points to a highly intimate knowledge of the natural history of the land and the forces which shaped it—the mountain owes its creation to the subduction of the oceanic plate that was once entirely offshore, further shaped by erosion

¹ Lushootseed is an Indigenous language spoken by central Coast Salish groups. Northern and Southern Lushootseed comprise its two major dialects.

 $^{2^{2}}$ taq^wu?ma? is only one possible spelling. For more information on Lushootseed variations in spelling, refer to the Tulalip Tribe language learning resource at: <u>tulaliplushootseed.com</u>

through glacial activity and the water cycle, and its glacier are a primary source of freshwater for the streams and rivers that play an essential role in sustaining their people. Further, the Lushootseed interpretation of "Don't Forget the Water" recognizes the fundamental importance of Mt. Rainier's water to humans, and it gives the instruction for each generation to care for the mountain ensure the health and continued presence of clean water for future generations (*Don't Forget the Water*). Pauline Hillaire, an Indigenous elder of the Lummi people, provides another perspective of the connection Indigenous peoples have had with the land as she recalls the great abundance of resources in this land given by the "Great Spirit from Mother Earth and Father Sea" (Hillaire and Fields 36).

The sustainability of the Indigenous relationship with the environment arising from their deep personal connection to the environment of Washington provides insights for our modern society to consider as climatic conditions worsen. Traditional Indigenous fire management practices are one example of an Indigenous practice which is receiving more attention. Euro-American logging industries and historical belief that prescribed fire have negative impacts on the environment by clearing trees, which could have been logged and used as lumber, led to the banning of this practice. As the size and frequency of wildfires on the west coast of North America are increasing, the ramifications of ceasing this practice has become evident. Indigenous fire practices helped to manage, preserve, and restore the natural environment by returning nutrients to the soil, encouraging the growth of pioneer plant species, controlling the spread of invasive species, and preventing the buildup of deadfall that fuels uncontrollable wildfires, in addition to cultivating it for human habitation, food, and resources (Boyd 2-4, 6). Another significant hallmark of Indigenous traditions and culture is found in the reverence for the ecosystems of the Pacific Northwest. The Squaxin Island Tribe have many stories in their

oral history which reflect this sentiment. *The Clam Legends* that tells of the origin of their people, depicting the creator of life as the Raven, who put their ancestors in clam shells and placed them throughout the Puget Sound. *Mason Lake and the Crying Loon* tells the story of a boy who disregarded his mother's orders and swam in Mason Lake, caught and ate a trout, and was transformed into a loon whose calls now serve as a warning to other children about the consequences of disobeying their mothers. *The First Salmon*, which describes a boy who loved salmon and went to the home of the Salmon People where he was allowed to visit his family each year after growing homesick—the Squaxin People remember the yearly return of the Salmon People, and take care to ensure they return to clean beaches and streams (*Squaxin Island Oral Histories and Salish Legends*). While it is crucial to avoid romanticizing Indigenous culture for profit or ulterior motives, it is undeniable that they had a relatively harmonious and sustainable coexistence with nature. Their way of life must be looked to as an example of the societal changes which are necessary to address modern climatic changes and ecological decline.

Euro-American Colonization – Disrupting Human Relationships with the Natural World

The first Euro-Americans to enter Washington were not dissimilar to Indigenous peoples in their perception of the land and waters—the variation of its geology and ecosystems was a source of wonder and awe. However, the Euro-American philosophical approach to the land lacked the respect and prudence of the Indigenous inhabitants. Where Washington's Native Tribes were careful with their use of the land's abundant resources, ensuring that little was wasted, the Euro-Americans saw opportunity for the exploitation of its natural resources (Goble, et al. 5). The Stó:lō nation succinctly described the interlopers when they had to invent a word that described the nature of these newcomers: *Xwelítem* or "Hungry People"—describing their insatiable appetite for land and resources while offering nothing in return (Hoy 125). More poignantly, tribal Elder Hillaire shares her personal experiences of the changes that occurred after the white man began to settle in the area. Ranging from disappearing traditional healing herbs, diminishing marine diversity and numbers, and most strikingly, the visible pollution of Bellingham Bay with mercury, oil, and sewage pouring out of refineries adjacent to her tribe's reservation (Hillaire and Fields 39-40).

The imposition of European values regarding human society and their conceptions of human-environment interactions reflected their indifference, if not outright contempt, of the Indigenous people and their relationship with the land. This sentiment is reflected in a page from a children's book The Happy Little Handaw which illustrates a mutually beneficial coexistence between a logger and the Northwest timbers Published in 1955 this book was undoubtedly a mark of intentional propaganda used to encourage support for the clear cutting efforts of the logging industry (Brock 543-546). While Indigenous peoples had a long history of cooperation and cultural exchange through events like the potlatch, the interlopers nonetheless tried to smother these practices, at great expense to the Native peoples (Hoy 121-123). Finally, the creation of an arbitrary international border, in addition to other artificial boundaries like reservations and state lines, also introduced problems for the environment and the Indigenous peoples, even at the expense of the colonizers. The childish back-and-forth hostilities between the United States and Canada in the coastal waters of the two countries, divided by an imaginary line at the 49th parallel, only served to delay—by several decades—the increasingly important salmon treaty which would help limit the impact of fishing on the diminishing health and population of salmon in Puget Sound (Wadewitz 142-147). Indigenous peoples, as one might expect, were caught in the crossfire. It wasn't until the 1970's when treaty rights were finally

beginning to be recognized through the Herculean efforts of Indigenous people throughout the region which was hastened through the activism of individuals like Billy Frank Jr. But, by then, the stability of the environment had begun to collapse, and Indigenous peoples had suffered mistreatment and disruption to their way of life.

The Future of Washington State

Fortunately, the efforts of colonization to extinguish the cultural knowledge and traditions of Indigenous Americans were wholly unsuccessful. Euro-Americans did not value these systems or their connection to the land, and believed that they could replace them with their own beliefs. However, Native culture is not, nor has it ever been, static—it adapts and changes according to the needs of the time, but the knowledge and core connection to the natural environment always remains. The effects of extraction industries and indifferent exploitation of the land which began with Euro-American colonization has created a climate catastrophe. We need only look to the examples of our Indigenous peoples, whose way of life allowed them to sustainably coexist with their environment since time immemorial in Washington state.

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