

## Chapter 1 : Maps and GIS | Encyclopedia of Puget Sound

*Puget Sound* / ˈpjuːdɛt sʌnd / is a sound along the northwestern coast of the U.S. state of Washington, an inlet of the Pacific Ocean, and part of the Salish Sea.

Tweet Admiralty Inlet was considered so strategic to the defense of Puget Sound at the turn of the century that three forts were built at the entrance with huge guns creating a "Triangle of Fire" that could theoretically thwart any invasion attempt by sea. Fort Worden, on the Quimper Peninsula at the extreme northeastern tip of the Olympic Peninsula, sits on a bluff near Port Townsend, anchoring the northwest side of the triangle. Fort Flagler anchors the southwest side from a bluff on Marrowstone Island. Together, these fortifications constituted the Harbor Defenses of Puget Sound. All six former U. Army forts are now owned by the State of Washington and have become state parks. But Puget Sound in Oregon Territory was considered too remote and not worth the cost of constructing defenses. Whiting, to investigate defenses for the Puget Sound region. This resulted in the establishment of new forts in Port Townsend and Bellingham to protect local settlements, but were not connected with the defense of Puget Sound. Another study by the War Department in recommended a single line of fortifications from Foulweather Bluff, northwest of Hansville on the Kitsap Peninsula, to Double Bluff on Whidbey Island, with a fortified island built in the middle of Admiralty Inlet. Due to the Civil War , the Army took no immediate action, but on September 22, , President Andrew Johnson issued an executive order setting aside land for military reservations on Puget Sound. In , a board of Army engineers was sent to the Pacific Northwest to identify permanent sites for fortifications. The engineers agreed with the earlier recommendations to establish forts on Foulweather Bluff and Double Bluff, but eliminated building a fortified island because of excessive costs. The plan did not advance beyond the discussion stage until the establishment of the Puget Sound Naval Station in Bremerton in . Now there was an important facility of military value to protect and in , the Army engineers returned to Puget Sound to plan a defense against a waterborne attack. They selected sites for three fortifications on promontories at the entrance to Admiralty Inlet: On June 6, , Congress authorized the Secretary of War to fortify these three points and build large gun emplacements to protect Puget Sound. Building the defense fortifications proceeded slowly until the Spanish-American War . There was no actual construction work until after the battleship USS Maine blew up and sank in Havana Harbor on February 16, , with the loss of officers and men. Construction materials for the forts were purchased largely from local sources. Good cement, in short supply in the United States, was imported from Antwerp, Belgium, in pound barrels. The guns and carriages were shipped from armories to Tacoma by rail and from there to the forts by barge. The engineers built large construction docks, with special features to cope with tides, near the sites, with tramways and small steam locomotives to haul equipment and supplies by rail car from the beaches to the bluff tops. The fortifications were equipped with batteries of 6-inch, inch, and inch "disappearing guns," so called because they disappeared behind the walls of their emplacements during reloading, protecting the gun and crew from enemy bombardment. In its day, the disappearing gun was the height of military technology. It was made obsolete only by long-range guns on battleships and the development of air power. The forts also used barbette carriages, which held the gun at the edge of the parapet at all times, a system that exposed the crew and provided less protection for gun and crew. The smaller 3-inch and 5-inch guns were mounted on pedestals that permitted the gun to be pivoted easily, making them a valuable defense against fast and maneuverable torpedo boats. Fort Flagler Marrowstone Island was the first site developed. In , by executive order, a section of land, acres, had been reserved for military purposes. In , the government purchased more land from individual owners to build additional gun emplacements. The contract for the construction of gun emplacements was awarded on June 22, , to the Pacific Bridge Company, Portland, Oregon. The detachment, consisting of three officers and 86 enlisted men, was commanded by Captain John D. Construction of 12 buildings, including offices, mess hall, and barracks, was completed in June . The first armaments consisted of three gun emplacements: Batteries Rawlins, Revere, and Wilhelm, each with two guns. Between and , six additional gun emplacements were added: When completed, Fort Flagler had 26 artillery pieces overlooking Admiralty Inlet: During World War I , the U.

Army used Fort Flagler as a training center for soldiers. Many of the buildings at Fort Flagler were torn down in because of dryrot, but they were rebuilt during World War II and the Korean War , when the Army used the fort for amphibious warfare training and maneuvers. Some of the gun emplacements were modified to accommodate anti-aircraft guns. Fort Flagler was officially deactivated on June 30, , ending 54 years of military jurisdiction. Washington State Parks has made buildings at Fort Flagler State Park available as conference facilities and recreation housing, and developed full-service camping and recreational facilities at the beach. In addition to In May , a fully restored historic mm anti-aircraft gun, found rusting away at the Snohomish Armory, was put on permanent display at the Fort Flagler Museum. In , the government purchased an additional acres of land from Dr. The contract to construct the gun emplacements was awarded to Maney, Goerig and Rydstrom Construction Company of Everett and work started in August Fort Casey was activated in with a small temporary garrison. While the barracks were being constructed, the new garrison bivouacked in tents. The test firing of the new big guns commenced on May 5, , and Fort Casey was pronounced ready for action. The first armaments consisted of six gun emplacements: Between and , four additional gun emplacements were added: When completed, Fort Casey had 34 artillery pieces sitting atop Admiralty Head approximately feet above sea level: Fort Casey was used as training facility during World War I , readying soldiers for combat in Europe. After the Armistice was signed on November 11, , the remaining artillery batteries were dismantled and the fort was placed on a caretaker status. This property was acquired by Washington state in and became Fort Ebey State Park, a acre campground with three miles of saltwater shoreline, in Following the war, Fort Casey stood vacant and fell into disrepair, a victim of vandalism and neglect. On June 30, , Fort Casey was officially deactivated. The Department of Defense declared the facility government surplus, transferring the property to GSA for disposal. The historic guns, part of the harbor defenses of Subic Bay, were mounted for display in Batteries Trevor and Worth. Today, the Central Whidbey Island Historic District, stretching roughly six miles on either side of Coupeville, and encompassing approximately 25 square miles, is one of the largest historic districts in the country, and has nearly structures listed on the National Register of Historic Places. The property was privately owned and the government had to clear title to the land through condemnation proceedings. The Army Corps of Engineers took charge of building the construction dock, warehouses, and a tramway to haul concrete for the gun emplacements from the dock to the mixing plant. To meet construction needs, the Army laid a pipeline from Port Townsend and pumped water into large storage tanks inside the fort. The arrival of wet winter weather turned the construction area into a sea of mud and slowed progress on the batteries. It took men almost three years to complete the excavation and concrete work for the gun emplacements. In March , the fort was finally ready to begin the work of installing the initial armament. Sixteen artillery pieces, shipped from the armory at Columbus, Ohio, arrived from the rail terminus at Tacoma by barge. A special heavy-duty tramway was constructed to haul the heavy artillery pieces from the dock area to top of the bluff. In March the guns were moved to their assigned positions and mounted in the batteries, ready for test firing. They arrived from Seattle on board the steamer SS Majestic on May 3, , and were quartered in tents pending the completion of the barracks. Meanwhile, the artillery company drilled and test-fired the new guns. A communication system, connecting the three forts by cable, was installed in Once work on the main batteries and army post had been completed, more troops were assigned there. The initial armaments consisted of six gun emplacements: During World War I, the complement at Fort Worden was greatly expanded as soldiers arrived for training prior to being sent to European battlefields. To keep up with the demand, construction of new barracks and buildings continued throughout the war. The fort was home to the 14th Coast Artillery Regiment of the U. The Army operated radar sites and coordinated Canadian and U. The Navy, responsible for the detection and identification of all vessels entering and leaving Puget Sound, monitored new underwater sonar and sensing devices. Most of the gun emplacements were modified for anti-aircraft guns, which replaced the outdated artillery pieces. It remained active as an administrative unit until June 30, , when the Harbor Defense Command was deactivated and the fort officially closed, ending 51 years of military jurisdiction. The Washington State Parks and Recreation Commission acquired most of Fort Worden on September 30, , when the state closed the juvenile treatment center. The park also includes the Puget Sound Coast Artillery Museum,

and a balloon hangar that was used for airships. There are mounts for three guns in Battery Harrison, along with associated rooms and tunnels similar to those found at Fort Worden and Fort Casey State Parks. Goat Island is now part of the Skagit Wildlife Area. Fort Ward had four gun emplacements: Batteries Nash, Warner, Thornburgh, and Vinton. Middle Point had only one gun emplacement, Battery Mitchell, built for two 3-inch pedestal guns, but they were never installed. After World War I, Fort Ward was placed in caretaker status and in the s, all the guns were removed. During World War II, the Navy used Fort Ward as a radio station and training school for communications personnel and controlled submarine nets that stretched across Rich Passage. Middle Point became part of Manchester State Park, a acre camping park; the Navy still owns the remainder of the reservation. This essay made possible by: James Hermanson, Rural Jefferson County: A Complete Recreation Guide Seattle: Port Townsend Publishing Co. History of Jefferson County ed. A Road Guide to History Seattle:

### Chapter 2 : Puget Sound - Wikipedia

*Coast Salish Villages of Puget Sound* On this page is a map of the known permanent village sites (c) of the Coast Salish people who lived--and still live--in the Puget Sound area of Washington State.

This name later came to be used for the waters north of Tacoma Narrows as well. It is defined as bounded to the north by the international boundary with Canada, and to the west by a line running north from the mouth of the Sekiu River on the Olympic Peninsula. Kruckeberg uses the term "Puget Sound and adjacent waters". Continental ice sheets have repeatedly advanced and retreated from the Puget Sound region. The most recent glacial period, called the Fraser Glaciation, had three phases, or stades. Since each new advance and retreat of ice erodes away much of the evidence of previous ice ages, the most recent Vashon phase has left the clearest imprint on the land. At its maximum extent the Vashon ice sheet extended south of Olympia to near Tenino, and covered the lowlands between the Olympic and Cascade mountain ranges. About 14,000 years ago the ice began to retreat. By 11,000 years ago it survived only north of the Canada-US border. Lake Washington and Lake Sammamish which are ribbon lakes, Hood Canal, and the main Puget Sound basin were altered by glacial forces. As the ice retreated, vast amounts of glacial till were deposited throughout the Puget Sound region. As the Vashon glacier receded a series of proglacial lakes formed, filling the main trough of Puget Sound and inundating the southern lowlands. Glacial Lake Russell was the first such large recessional lake. From the vicinity of Seattle in the north the lake extended south to the Black Hills, where it drained south into the Chehalis River. The second major recessional lake was Glacial Lake Bretz. Many beaches about the Sound display glacial erratics, rendered more prominent than those in coastal woodland solely by their exposed position; submerged glacial erratics sometimes cause hazards to navigation. The sheer weight of glacial-age ice depressed the landforms, which experienced post-glacial rebound after the ice sheets had retreated. Because the rate of rebound was not synchronous with the post-ice age rise in sea levels, the bed of what is Puget Sound, filled alternately with fresh and with sea water. The Puget Sound system consists of four deep basins connected by shallower sills. There has not been a major subduction zone earthquake here since the magnitude nine Cascadia earthquake; according to Japanese records, it occurred 26 January 1700. Lesser Puget Sound earthquakes with shallow epicenters, caused by the fracturing of stressed oceanic rocks as they are subducted, still cause great damage. Typical Puget Sound profiles of dense glacial till overlying permeable glacial outwash of gravels above an impermeable bed of silty clay may become unstable after periods of unusually wet weather and slump in landslides. Puget Sound is part of a larger physiographic structure termed the Puget Trough, which is a physiographic section of the larger Pacific Border province, which in turn is part of the larger Pacific Mountain System. The average volume of water flowing in and out of Puget Sound during each tide is 1. The maximum tidal currents, in the range of 9 to 10 knots, occurs at Deception Pass. Tides in Puget Sound are of the mixed type with two high and two low tides each tidal day. The configuration of basins, sills, and interconnections cause the tidal range to increase within Puget Sound. Flora and fauna[ edit ].

## Chapter 3 : coast guard | CGFA of Puget Sound

*Sector Puget Sound: On July 30, , U.S. Coast Guard Group Port Angeles and U.S. Coast Guard Sector Seattle combined to become U.S Coast Guard Sector Puget Sound. The purpose of this merger is to bring the operational control of all Coast Guard resources located within the present Captain of the Port Puget Sound area of responsibility under.*

Britain was especially interested in improving its knowledge of the Southern Pacific whale fisheries, and in particular the location of the strategically positioned Australia , New Zealand , the legendary Isla Grande, and the Northwest Passage. Her captain was Henry Roberts and Vancouver his 1st Lieutenant. Although it is now known that his claims of loss were somewhat exaggerated, Britain had recently beaten Spain at war and seemed ready to resume hostilities; Parliament readied the fleet in the Nootka Crisis. The Spanish capitulated in the Nootka Sound Convention , whose terms resulted in inconsistent instructions for the British and Spanish officers sent to implement them. Vancouver understood from the discussions he had with ministers and officials in London prior to his departure that his task was to receive back from the Spanish commander at Nootka Sound land and property that had been confiscated from the English fur traders in July and of establishing a formal British presence there to support and promote the fur trade. Proposals to establish a British colony on the North West Coast had been discussed in commercial and official circles in the s, encouraged by the success of the project to colonize Botany Bay and Norfolk Island. During the war crisis with Spain that resulted from the arrest of the English fur traders at Nootka Sound, plans were made for a small party of convicts and marines to be sent from New South Wales to make a subsidiary settlement on the North West Coast: He believed that once he had accepted restitution of Nootka Sound its and associated territory he was to make preparations for founding a British colony there that, at least initially, would have had a close connection with the New South Wales colony. Supplies and materials for establishing the colony were sent on the Daedalus storeship. A change to a more conciliatory British policy toward Spain after he left England in April , a result of challenges arising from the French Revolution , which was not communicated to him, left him in an embarrassing situation in his negotiations with the Spanish commander at Nootka. Vancouver also objected to the new Spanish post at Neah Bay. In the end the two agreed to refer the matter to their respective governments. The chartered merchant ship, Daedalus, would rendezvous at Nootka Sound a year later with supplies. The expedition was supposed to take two or three years. The Muster[ edit ] The Muster of the expedition lists men. There was a large detachment of Marines; whether these were to assist with exploration in hostile territory or to discourage mutiny is not recorded. Two year-old aristocrats, the Honorable Thomas Pitt nephew of the Prime Minister and the Honorable Charles Stuart son of a Marquis , were brought aboard as able seamen; they proved troublesome. Among the supernumeraries were Menzies who kept a meticulous journal of the expedition [5] and his servant John Ewin or Ewing. They reached Santa Cruz in Tenerife on 28 April; this was intended as a rest stop and opportunity to botanize, but ended in a drunken brawl in which several officers were thrown into the bay or beaten. After more botanizing, socializing, and recruiting replacements for deserters, the ships left on 17 August. The surgeon took ill during an outbreak of dysentery one sailor died ; Menzies assumed his duties for the rest of the expedition. The ships proceeding separately, both discovered the sub-Antarctic Snares Islands 23 November which Vancouver considered a severe shipping hazard hence, the name. En route to Tahiti, the crew of Chatham furthermore discovered the Chatham Islands before reaching the Polynesian island on 26 November; Discovery arrived three days later. Putting in at Tahiti , Vancouver enforced rigid discipline to avoid the personal connections that had led to a mutiny on the Bounty. Towareroo, not subject to such discipline, decided he preferred the comforts of Tahiti and had to be forced to leave. The mountain was first sighted by Vancouver during his exploration of Puget Sound in the spring of Discovery and Chatham proceeded to North America. Historians believe that HMS Chatham lost a lb. Within a day the Chatham also ran aground on rocks about two miles away. On 21 June , dealing with poor weather and dwindling food supplies, Vancouver decided to head back to HMS Discovery some 84 miles away; on their return they encountered the Spanish ships under the

respective commands of Capt. Malaspina and Galiano whom Lt. Broughton had already met , near present-day Vancouver , British Columbia. Both were exploring and mapping the Strait of Georgia, seeking a possible Northwest Passage and a determination of whether Vancouver Island was an island or part of the mainland. The two commanders established a friendly relationship and agreed to assist one another by dividing up the surveying work and sharing charts. They worked together in this way until 13 July, after which each resumed circumnavigating Vancouver Island separately. Vancouver had not set out from Nootka but rather began at the Strait of Juan de Fuca, while Galiano began his circumnavigation at Nootka. Vancouver and Whidbey shared astronomer duties, which later led to friction over pay. On 11 August, the expedition sailed south, reaching Nootka Sound on 28 August, where they exchanged friendly gun salutes with a Spanish frigate commanded by Juan Francisco de la Bodega y Quadra. Friendly Cove , Nootka Sound. Volume I, plate VII from: Relations between Bodega y Quadra and Vancouver were very cordial and even friendly, but they could not reconcile their conflicting instructions and interpretations of the Nootka Convention. Joseph to get further instructions. Thus enlarged, the expedition moved south; Whidbey in Daedalus surveying Grays Harbor while the other two ships dared the bar of the Columbia River. The smaller Chatham made it over the bar and sent small boats upriver. Discovery, whose crew was beginning to suffer from scurvy , proceeded to northern Spanish Las Californias province, reaching the Golden Gate and the Royal Presidio of San Francisco on 14 November to a friendly and helpful reception from the Spanish. The other ships arrived by the 26th. Vancouver traveled overland to visit the mission in Dec. Vancouver conducted surveys and impressed Kamehameha with the reach of British power while Menzies collected specimens. Over the winter, Vancouver ordered numerous improvements to the small boats that did the detailed survey work, to provide better shelter and supplies for the crew. The former, in passing the north point of what he named King Island , proved its insular nature. The day before leaving Restoration Cove 10 June , Johnstone was again sent out to explore. From here, Johnstone and Barrie were dispatched to the north, returning on the 29th. They returned on the 15th, after having explored Gilttoyes Inlet and the length of Grenville Channel to the northwest point of Porcher Island. On the 21st they were hit by a storm, only being saved by the timely arrival of a whaleboat sent out from the Butterworth of London, under William Brown, whose merchant squadron was safely anchored off the north coast of Stephens Island. From Brown they learned of a "large opening" to the north Clarence Strait , which he had earlier investigated. With this news, the ships left the next day, reaching Salmon Cove, on the west side of Observatory Inlet , two days later. The same day 24 July , Johnstone and Barrie were sent out; the following day Vancouver left. While Vancouver explored to the heads of Portland Canal , Fillmore and Nakat Inlets , and Boca de Quadra and circumnavigated Revillagigedo Island during which they were attacked by Tlingit near what was named Escape Point, having two of his men injured , Johnstone and Barrie explored the channels to the southeast, including Work Channel and Khutzeymateen and Quottoon Inlets. On 6 September, a few days after his return, they weighed anchor, sailing to what was named Port Protection, on the northwest coast of Prince of Wales Islandâ€”which they reached a couple days later. The boats were once again sent out: Johnstone charted the south coast of Kupreanof Island , while Whidbey explored the southeast part of Kuiu Island , reaching the head of Affleck Canal. The latter returned on 21 September; the ships left Port Protection the next day. They summited on 16 February and, using a barometer , measured its height to within 50 feet of the modernly accepted value. Vancouver continued to negotiate with Kamehameha; on 25 February, the King made a formal proclamation of accession, declaring that they were "Tanata no Britanee" People of Britain. Precisely what Kamehameha meant by this may not be entirely clear since Britain exerted no sovereignty over the islands during his reign. They spent late April and early May charting the furthest reaches of what Vancouver renamed Cook Inlet ; Vancouver himself reached the head of Knik Arm , while Whidbey reached the head of Turnagain Arm. Whidbey the western half to Bligh Island, and Johnstone from there east and southwards. From here the expedition worked its way eastward. Soon Whidbey was dispatched to survey the area. He returned on the 27th. Despite constant rain and more than one hostile encounter with a large group of Tlingits , he was able to explore up Lynn Canal to the heads of both Chilkat and Chilkoot Inlets , and follow the length of the west coast of what was later named Admiralty Island , rounding its southern point to spend a night near Point Townshend on its southeast coast. On the morning of 2 August they reached a cove on the

southeast coast of the latter island, which Vancouver later named Port Conclusion. Two boat parties under Whidbey and Johnstone were sent out the next morning; both returned on the 20th "in the midst of a deluge of rain". While Whidbey proceeded up Stephens Passage and completed the survey of the east coast of Admiralty Island including Seymour Canal and Glass Peninsula and the continental shore opposite it, Johnstone charted the west, north, and east coasts of Kuiu Island, proving its insularity; the two met each other off the northeast coast of Kupreanof Island, Whidbey having investigated the channel to the east of the island before being stopped by shoals. According to the diaries of several officers, with the completion of their survey, they felt great joy at realizing they could return home. A few days after their return they left Port Conclusion. Unfortunately, as they set out for Nootka, Isaac Wooden was lost in a boating accident off Cape Ommaney, one of the few to die on the expedition. The treacherous rocks off the Cape were accordingly named Wooden Rocks. Four days later, Discovery and Chatham put into Nootka; all were saddened to learn that Quadra had suddenly died. On 6 October, the survey ships departed for Monterey. Daedalus was sent back to England with the troublesome Mr. Pitt, who had worn out his welcome with multiple disciplinary infractions. On 6 November, Discovery put into Monterey in Alta California, to learn that while negotiations had most likely been concluded in Europe, there were still no instructions. The expedition left on 2 December, reached the Tres Maria Islands on 17 December for provisions and botanizing, and spent Christmas at sea. Although they had orders to avoid Spanish possessions in the Pacific, necessity required some refitting and they had, in addition, orders to survey as much of the coast as possible. Vancouver therefore put into Valparaiso in the Viceroyalty of Peru and present day Chile, on 25 March for five weeks of repairs with the help of the Spanish. Helena should weather separate them. Nonetheless, Vancouver spent much time searching for the island of Isla Grande, previously reported at S, and confirmed its nonexistence. About this time, Lt. Deciding correctly that Vancouver would not have left his surveying task unfinished, they departed to chart the coast of east Asia. On 2 July, Discovery and Chatham put in at St. Helena and learned that the nation was at war; their battered ships were nearly the weakest vessels in the Atlantic. However, they captured a Dutch East Indiaman by surprise. This proved a mixed blessing; putting a crew on the prize required Vancouver to get additional hands where he could. Vancouver departed the ship to report; Baker brought Discovery safely home to Long Reach on the Thames, completing her four-and-a-half-year mission on 20 October. Aftermath[ edit ] The expedition returned to a Britain more interested in its ongoing war than in Pacific explorations. Vancouver was attacked by the politically well-connected Menzies for various slights. Pitt challenged Vancouver to a duel and attempted to beat him on a London streetcorner.

### Chapter 4 : Invertebrates | Encyclopedia of Puget Sound

*Coast Guard Sector Puget Sound, Seattle, WA. 2K likes. Welcome to the U.S. Coast Guard Sector Puget Sound page on Facebook. If you're looking for the.*

**Description** The Puget Sound is a kind of estuarine system situated on the northwest coast of Washington which is a small portion of Pacific Ocean and a part of the Salish Sea. This place is interconnected with many marine waterways and basins. It possesses one major or two minor connections, which have an opening in the Pacific Ocean and passes through the Strait of Juan de Fuca. It extends kilometers from Deception Pass in the north to Olympia and the south of Washington. The word Puget Sound is not only used for the water body but also for the Puget Sound region, which includes cities like Tacoma, Olympia, Seattle, and Everett. After the year , both United States and Britain claimed the Oregon country until the Oregon Treaty in the year The Puget Sound remained a disputed land until the year , and after this it officially became part of the U. The first American traders settled in the town in the 19th Century, and the European settlement was first done at Fort Nisqually, which was a fur trade post. The Agricultural Company was also established here, and the British ships like the Beaver used it to export foodstuffs. The first American settlement was located in Tumwater and in the year the Puget Sound was connected to the eastern states by the railroad line of the Northern Pacific.

**Modern Significance** The area offers a great vacation to the tourists as one can enjoy island retreats, rich variety of vacation tour, holiday pursuits, which also include the city life, first class resorts, romantic country inns, cozy bed, breakfasts and much more. The tourists here also go for kayaking, boating activities, and hiking whilst on a Puget Sound holiday. The Sound also provides an island passage to the Alaska, a maritime playground is there for pleasure boats, and one can enjoy salmon catching, but this has been reduced in the recent years. Whale watching excursions are also popular there, and it constitutes a lucrative business in the San Juan Islands in the Upper Puget.

**Habitat and Biodiversity** It has 3, species of the invertebrates, which mainly includes the oysters, sea urchins, sea stars, and octopuses. The fishes like salmon, herring, Pacific cod, and spiny dogfish can be found and the birds seen in this area are western sandpiper, bald eagle, and grebes. One can also see more than a million geoducks along the shore, and they can live up to years and are said to be the longest-living animal in the world.

**Environmental Threats and Territorial Disputes** In the past years, there has been a recession in the species of fishes, which has seem many of them added to endangered species lists. The factors contributing to their losses are toxic contamination, a rise in the sea level due to global warming, a loss of beaches as they give way to storm surges, and eutrophication due to chemical runoffs. This page was last updated on April 25,

## Chapter 5 : Puget Sound Vessel Traffic Service

*The Puget Sound is a kind of estuarine system situated on the northwest coast of Washington which is a small portion of Pacific Ocean and a part of the Salish Sea.*

Stretching offshore from northern California to British Columbia, the Cascadia subduction zone could slip at any time, causing a powerful earthquake and triggering a tsunami that would impact communities along the coast. Scientists from multiple disciplines at the University of Washington and other institutions are learning more about this hazard. Dozens of UW scientists are part of the M9 Project , a research endeavor funded by the National Science Foundation to study the Cascadia subduction zone and communicate information about potential hazards to government officials and the public. Key goals of the M9 Project include mathematical modeling of tsunami waves, which tries to predict where and how an earthquake-triggered wave will affect the coast. Two University of Washington scientists – applied mathematics professor Randy LeVeque and affiliate professor of Earth and space sciences Frank Gonzalez – recently talked about how they model tsunami hazards along the Northwest coast. How did you become involved in the field of tsunami modeling? In or , my former doctoral student Dave George started applying Clawpack – a software we developed here to model wave propagation – for tsunamis just before the Indian Ocean tsunami happened. Frank had all of these contacts in the tsunami community and the hazard community because he had already been working on this for 30 years. How do you model tsunami danger on a stretch of coastline? We use GeoClaw , the tools we adapted from Clawpack to be used specifically for geophysical modeling. What information do you put into your models? The software is set up so you can easily put in a new region just by having a fine-scale topographic digital elevation model for that particular region. Wave height of the tsunami from the Tohoku earthquake off the east coast of Japan. NOAA Have recent earthquakes and tsunamis helped improve your models? For example, after the Tohoku earthquake and tsunami in Japan, geologists and seismologists learned that splay faulting may be more common than was believed before. What is splay faulting? But in the case of Tohoku, the rupture extended all the way up to the ocean floor – these are splay faults, which are angled to the main fault, and where the seafloor itself can rupture. What areas along the Washington coast have you modeled? Pretty much up and down the coast. We did some modeling of La Push and Neah Bay to develop tsunami inundation maps, for example. How would a tsunami from a large offshore earthquake affect Puget Sound? The tsunami would be coming from the open ocean, so it would come in through the Strait of Juan de Fuca and come down to Puget Sound. But by the time the tsunami gets down into Puget Sound it will be smaller than on the coast. So, is the tsunami danger in Puget Sound not as bad as the open coast? Not nearly as much danger during an earthquake along the Cascadia subduction zone. These faults are actually under Puget Sound and can have big earthquakes and cause tsunamis. That Seattle Fault tsunami has been modeled by others. That wave is quite severe, quite high. And the magnitude used to generate that wave is only about 7. Geology of the Cascadia subduction zone. USGS How useful can your models be for communities in tsunami hazard areas? People take the kind of information Randy and I provide about tsunami hazard and assess the vulnerability of communities, and emergency management officials assess preparedness efforts. In Westport they just had their groundbreaking in January to build a new vertical evacuation structure for tsunamis at Ocosta Elementary. It happens to sit on a relatively high part of that peninsula. From the modeling that we did, it looks like under a worst-case scenario that the area right around the school would have only a couple of feet inundation. What would you like to improve or change about your approach to tsunami modeling? We look at many scenarios. That approach gets us results to say that one area has a much higher probability of flooding than another area. Eventually I think emergency managers will want those kinds of maps. It provides a more sophisticated view of the hazard. Not just worst-case, but what the probability is of each scenario and if there is a more likely case we should prepare for instead. What do you think the public most misunderstands about tsunami modeling? There is a big educational effort that is ongoing. Randy and I go to community meetings and handle questions on the science of tsunami risks and give short presentations. You have to be really, really careful and specific in sending a message to the public. What do you like best about your work on tsunami

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modeling? That makes it interesting. For more information, contact LeVeque at or rjl amath.

### Chapter 6 : Sector Puget Sound

*The Harbor Defenses of Puget Sound (CDSG) More info. FORT WARD / Bean Point / Coast Artillery. US Harbor Defense Locations. Armament (gun and mortar batteries).*

If you are interested in a particular group or area of the Sound click on the appropriate section of the small black and white map to the left. Then, a color map of the area you choose will download. It is only from these larger scale smaller area maps that you are able to access information about each of the villages. The maps are not at all designed to pinpoint locations, which might result in unlawful vandalism or destruction of the sites, but rather to provide a context for imagining both where and how the Coast Salish people lived on this land. They shared a similar life-style oriented towards fishing, hunting and gathering, as well as creating the implements necessary to engage in these activities. Salmon was the most important food. The dugout canoe was the primary means of transport. A typical village was located adjacent to navigable water and composed of a small number of large cedar-planked longhouses--each giving shelter to thirty, forty, or more, usually related individuals. In some cases, all of the longhouses of a village were located right next to each other. In other cases, houses considered part of the same village might be strung out for miles along a river. The shed-style longhouses of this Central Coast Salish village c. Woven reed mats were piled for mattresses and cushions, animal skins for covers. These would be removed during the day so the platform could be used for seating. Above the platforms were storage shelves holding baskets, tools, clothing, etc. Dried food hung from the ceiling above the earthen floor, which could be used as a work area or cleared for gatherings. In the larger houses each family would have a fire and partitions made of mats would separate the family compartments. Roof slats could be adjusted to let smoke out and light in. This post-contact Makah longhouse, though similarly constructed, contains such items as a sail, sealskins, iron pots, etc. During the rest of the year variously composed bands would migrate among traditional camps at resource-rich areas, usually mingling with people from other, sometimes faraway, villages. Strength of "tribal" affiliation varied among groups and probably throughout time, depending on whether there was a need requiring organized action. Although I have used currently accepted tribal designations in the village descriptions, some would consider them to be vast oversimplifications, or even largely artificial constructs, made for the sake of convenience by the early white settlers and perpetuated ever since. The period around was one of flux. Settlers had not yet arrived in this area but their diseases had. Vulnerable coastal villages were already being decimated. Some coastal groups were re-consolidating in more favorable locations. Some riverine people were moving to occupy depopulated villages along the coast. So, although most all of the village sites described herein were of long-standing, their composition may have been of more recent origin. And memories of other settlements have not only long been lost, but doubtless were never recorded. This assumption led me to be generous the handful of times I had to decide whether or not a questionable site should be included on the map. Click on the storytelling icon on the map to read a synopsis of the relevant story. Base map used with written permission, based on landform map "Puget Sound Region, Washington", copyright D Molenaar, The base map on which both the village and storytelling sites are plotted represents the way this area appeared before the arrival of settlers in the early s. This was achieved by removing from a beautifully rendered shaded-relief map provided by Molenaar Pictorial Maps , all--that could be identified--of the contemporary roads, cities, dams, fills and clearings, and then restoring a number of rivers to their original beds and Lake Washington to its pre level. It was a process akin to acting like a virtual Corps of Engineers in reverse. I would like to acknowledge my debt to David M. Buerge for his inspiring description of Seattle-area Duwamish villages, particularly those on Lake Washington. And I am very grateful for the continuing guidance and assistance of Dr. Jay Miller, anthropologist, linguist and author, who has generously reviewed and edited the village descriptions. My e-mail address is tombodailey hotmail.

### Chapter 7 : Coast Salish Villages of Puget Sound

## DOWNLOAD PDF COAST OF PUGET SOUND

*Puget Sound and Coastal Rivers - Special Rules. Washinton Sport fishin rules eettie july 1, june 30, Body of Water SpecieS date additional ruleS.*

### Chapter 8 : Albert Bierstadt | Puget Sound on the Pacific Coast () | Artsy

*The Puget Sound Institute notes that the amounts of opioids detected were thousands of times smaller than a typical human dose. And none of the mussels tested are near any commercial shellfish beds.*

### Chapter 9 : Triangle of Fire - The Harbor Defenses of Puget Sound () - calendrierdelascience.com

*Marine Critical Habitat for Puget Sound Chinook Salmon (NMFS, ) Marine Critical Habitat for Hood Canal Summer-run Chum Salmon (NMFS, ) OR coast Coho Salmon Critical Habitat (NMFS, ).*