

**Our Ocean Backyard—*Santa Cruz Sentinel* columns by Gary Griggs,
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The Biggest Wave Ever Witnessed

Really big waves usually get our attention. The largest waves most of us have probably ever seen along the Santa Cruz coast have likely been at Steamer Lane, and may have been 15 to 20 feet high. If you've driven north to Mavericks near Half Moon Bay during a large swell you might have seen waves considerably larger, maybe 25 to 50 feet high.

These waves are all generated by the wind during storms far out to sea, and it's the interaction of these waves with the bottom topography that determine how large these waves can get as they break along the coastline.

Although very high and frightening to nearly all of us, even waves 50 or 75 foot high seem modest compared to a wave generated 60 years ago along the coast of southeast Alaska. This was a wave you would be happy not to have witnessed up close, although six people actually did. Only four of them lived to tell about it.

At a little after 10:00 pm on the evening of July 9, 1958, an 8.3 magnitude earthquake along the Fairweather Fault in southeast Alaska shook loose about 40 million cubic yards of rock high above the northeastern side of Lituya Bay. This huge mass of rock (equivalent to about 4 million dump truck loads) plunged from an elevation of 3,000 feet down into the bay.

The impact of the rock and debris generated a wave (actually a local tsunami) that washed high up the ridge on the opposite side of the inlet. The wave hit with such power that it swept completely over the spur of land and stripped off all the soil and trees from elevations as high as 1,720 feet above sea level! This was the highest wave ever documented. For a local comparison of the height of this wave, San Francisco's new Salesforce Tower is 1,070 feet high.

The wave then continued down the seven-mile length of Lituya Bay, ripping out or snapping off trees on both sides of the bay at elevations up to 600 feet and then washed over a sand spit and into the Gulf of Alaska. The force of the wave stripped the soil off down to bedrock and snapped off large Spruce trees, some with trunks up to six feet in diameter.

Lituya Bay is one of the only protected anchorages in this part of southeast Alaska so is a common place for boats to spend the night. Three fishing boats were anchored in the bay on the fateful night the giant wave washed through.

Bill and Vivian Swanson, who were asleep in the *Badger*, and Howard Ulrich and his 7-year old son Junior, in the 38-ft *Edrie*, all survived. Both boats were anchored about a mile up Lituya Bay from the entrance. Orville Wagner and his wife Mickey were killed when their boat, the *Sunmore*, was sunk after being hit by the wave as they tried to head out of the bay. No trace of them or the boat was ever found.

The motion of the water from the earthquake awoke Howard Ulrich who watched the mountains shaking and clouds of dust rising. Although it was night, this far north there was still light at 10:00 pm in the middle of summer. Ulrich later reported hearing a deafening crash, like an explosion, at the head of the bay.

Ulrich soon noticed a gigantic wall of water coming down the inlet towards them, cutting a swath of trees down along both sides of the bay. He estimated the wave as 50 to 75 feet high and very steep as it got closer. He got a life jacket on his young son, started the engine but was unable to raise the anchor before the wave struck. He had steered the *Edrie* to face the wave directly and as she rose, the anchor chain snapped. Thinking that there was no chance of survival, Howard grabbed his radiophone and yelled into it: "Mayday! Mayday! This is the *Edrie* in Lituya Bay. All Hell as broken loose in here. I think we've had it. Goodbye."

The boat with Howard Ulrich and his son was carried toward and possibly over the south shore by the wave, and then back toward the center of the bay by the backwash. The water in the bay swashed back and forth for about 30 minutes and then became calm. After keeping the boat under control and dodging logs and debris throughout this violent ordeal, Howard and Junior Ulrich powered out of Lituya Bay at 11:00 that night, happy to be still alive.

The Swansons were also very fortunate. The *Badger*, still at anchor, was lifted up by the wave and carried completely over the sand spit at the entrance of the bay, stern first, riding the wave like a surfboard. Bill Swanson reported looking down at the top of the trees, estimated at about 80 feet tall, as they were carried over the spit. The wave broke and the boat hit the bottom and began taking on water. The Swansons abandoned their sinking boat, got into a small dingy and were fortunately rescued by another fishing boat two hours later.

This wasn't the first event to generate large waves in Lituya Bay, however. Ship logs of the French Explorer LaPerouse (who is credited with the discovery of the Bay in 1786) commented on the lack of trees and vegetation on the sides of the bay, "as though everything had been cut cleanly like with a razor blade." Other early explorers had also commented on successive lines of cut trees, indicative of past large landslides and inundations by waves.

Photographs of trimlines, where all of the trees were removed, taken from 1894 to 1929 show that at least one and possibly two large waves occurred between 1854 and 1916. These trimlines were largely destroyed by a huge 1936 wave that uprooted and broke

trees off as high as 500 feet around the bay. The 1958 wave, however, removed all of the previous evidence and was the largest wave yet. Because of the unique geologic and tectonic conditions of Lituya Bay, such giant waves will undoubtedly occur again in the future.



Lituya Bay, Alaska