Port Valdez invertebrates stabilized 26 years after quake

April 25 2011

It took 26 years for marine invertebrates living on the Port Valdez seafloor to stabilize after Alaska's Great Earthquake of 1964, according to a scientist at the University of Alaska Fairbanks.

"The earthquake, which measured 9.2 on the Richter scale, and the tsunami waves that followed, impacted every marine community in Prince William Sound," said Arny Blanchard, a research assistant professor at the UAF School of Fisheries and Ocean Sciences. Four decades of monitoring, including samples collected last year, have confirmed that the seafloor now resembles that of an undisturbed glacial fjord.

Blanchard's findings, along with those of Howard Feder, UAF professor emeritus, and Max Hoberg, UAF researcher, were published in the journal *Marine Environmental Research*. The findings shed light on how long it takes for seafloor ecosystems to recover after earthquakes.

The 1964 earthquake and resulting tsunami wreaked havoc on intertidal beaches and seafloor of Port Valdez, according to Feder, the leader of the biological component of the project from 1971 to 1990. Marine plants and animals on Port Valdez beaches were destroyed by the tsunami while the earthquake deposited massive amounts of sediment on the seafloor. This caused the whole community of bottom-dwelling marine invertebrates—such as sea worms, snails and clams—to change.

Some seafloor invertebrates usually found in glacial fjords like Port

Valdez, such as the sea worms Terebellides stroemi and Galathowenia oculata, virtually disappeared. Other animals took advantage of the disturbance and colonized the area. One of those animals is a family of sea worms called Capitellidae. They became unusually dominant in the region for a few years. According to Blanchard, Capitellidae are known for being highly opportunistic and tolerant of disturbance.

The diversity and abundance of marine invertebrates in Port Valdez was highly variable from 1971 to 1989 compared to other glacial fjords, primarily as a result of the earthquake. Over time, the community of animals stabilized. Today, the balance of bottom-dwelling animals looks more like an undisturbed glacial fjord.

"The ecosystem was in such flux that responses by seafloor communities to regional climatic variability were masked by the recovery process," said Blanchard.

Provided by University of Alaska Fairbanks